JUNE, 1954

# PRODUCTS finishing

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Finishes on Metal Products

# LEA newsreel

JUNE 1954

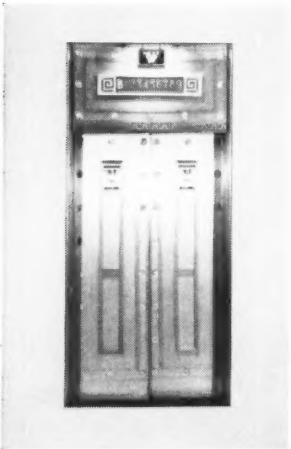
## LEA SATIN FINISH—"The Finish of Quality"

- Satin Finished Articles have that quality look and retain this appearance for a long time because the finish is not easily marred.
- The economy of the Satin effect is well known. The Satin Finish blends with and eliminates the effect of underlying metal imperfections. As a result one or more finishing operations become unnecessary, thereby cutting production costs.
- Satin Finished products are finding more and more consumer acceptance everyday

Here are some case histories showing how the Lea Method of Satin Finishing has helped cut production costs.

### ALUMINUM

Material — Aluminum.
Article — Furniture trim.
Method of Forming — Punching and stamping.
Final Finish — Satin.



Lea Method:
1. 120 set-up wheel.
2. Lea Compound Grade "L" or "C" on 10" diameter loose muslin buff at 1500 r.p.m.
3. Anodize.

Remarks —
Previously this work had been done by the use of Tripoli buffing after the polishing wheel operation, resulting in some polishing marks remaining. This step involved excessive cleaning which was entirely eliminated by the Lea Method.

### BRASS

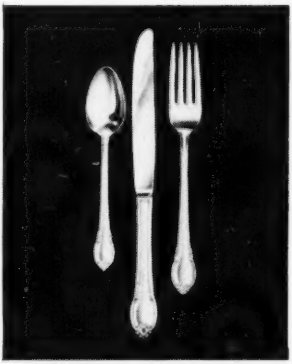
Material — Brass.
Article — Heavy Door Pulls.
Method of Forming — Casting & machining.
Final Finish — Satin finish.
Lea Method:
1. 100 set-up wheel (canvas).
2. 120 set-up wheel (felt).
3. Grade "B" Lea Compound on a 10" diameter muslin buff with radial sewing at 1800 r.p.m.
4. Lacquering.

Remarks —
The Lea Compound step was done in the same direction as the last polishing wheel operation so that there was no crossing of lines. The finish desired was produced with a minimum number of wheel operations and all cleaning eliminated.

### STEEL

Material — Steel.
Article — Escutcheon plates, door plates, etc.
Method of Forming — Stamped.
Final Finish — Special satin brass plate.
Lea Method:
1. Brass plate.
2. Lea Compound Grade "R" on a 10" loose buff at 1500 r.p.m.
3. Lacquering.

Remarks —
In substituting for wet scratch brushing, the Lea Method eliminates all cleaning and drying and the nuisance of water stains on the brass surface.



### SILVER

Material — Silverplate.
Article — Tableware.
Method of Forming—Forging (nickel silver).
Final Finish — Butler Finish.*
Lea Method:
1. Silver plate.
2. Lea Compound Grade "FG," "MF," or "MH" on 6" brass wire wheel at 800 r.p.m.

Remarks —
Fine grades of Lea Compound on a brass wire wheel produced the bright line finish required without the aid of a prior color buffing operation common to the old wet scratch brushing procedure.

*Butler Finish — A fine delicate satin finish with some brilliance.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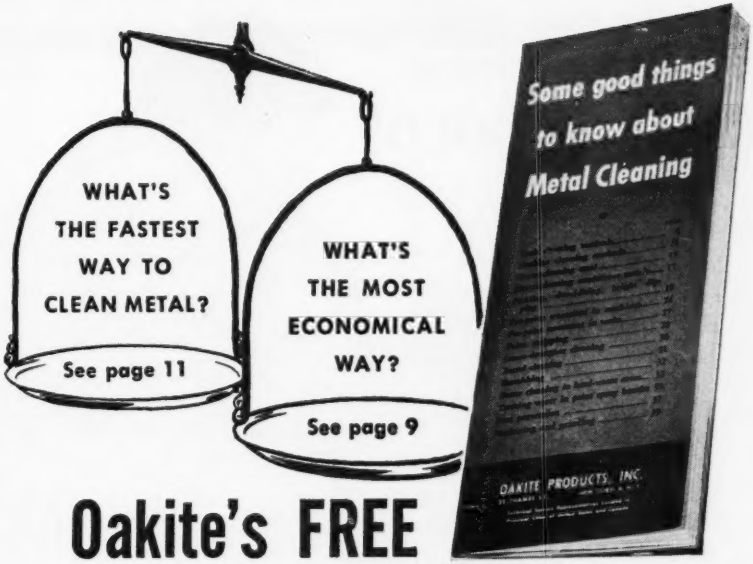
WHAT'S THE FASTEST WAY TO CLEAN METAL?
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WHAT'S THE MOST ECONOMICAL WAY?
See page 9
Some good things to know about Metal Cleaning
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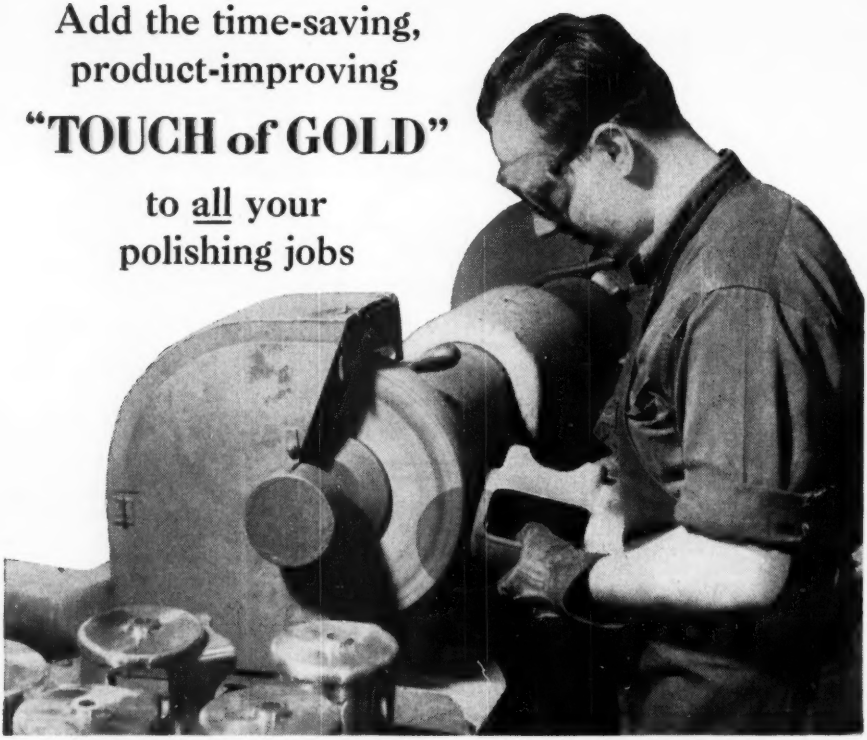

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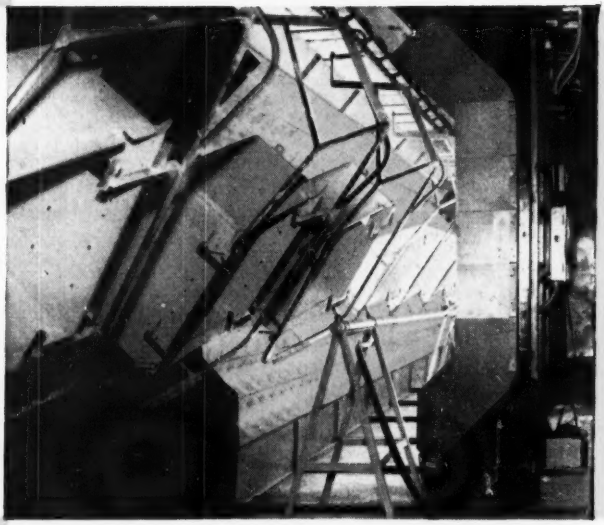

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# Products Finishing

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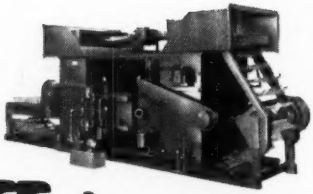

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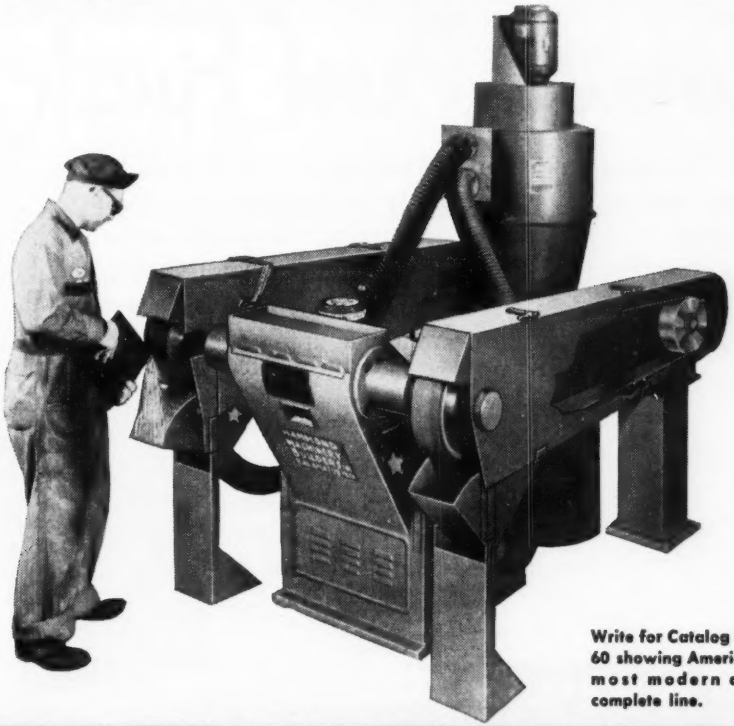

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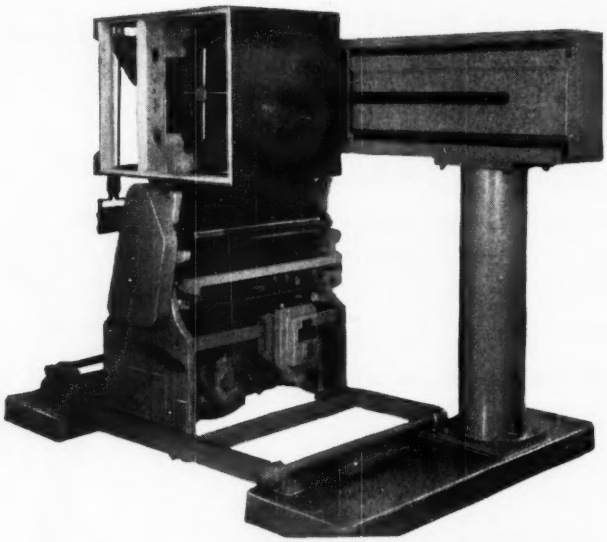

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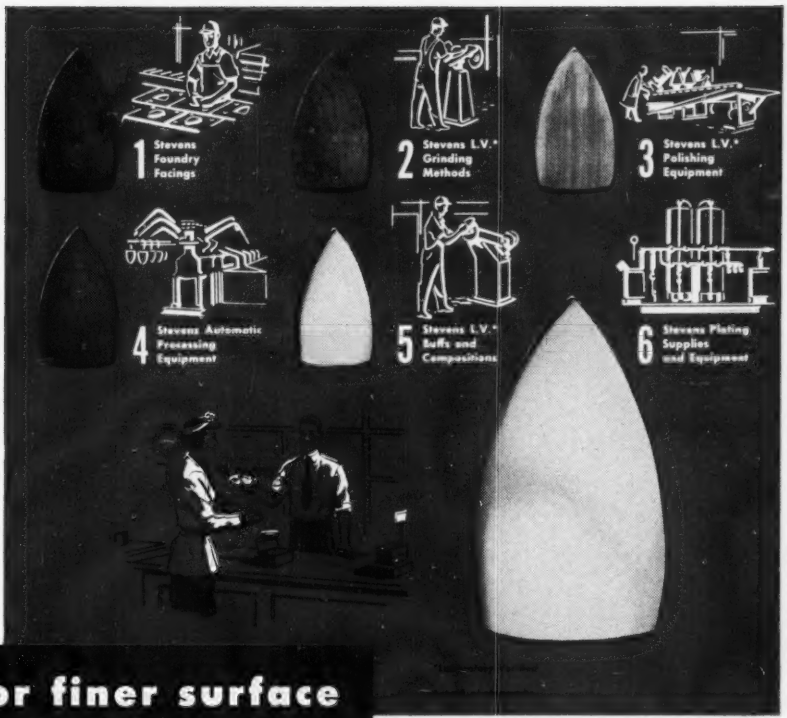
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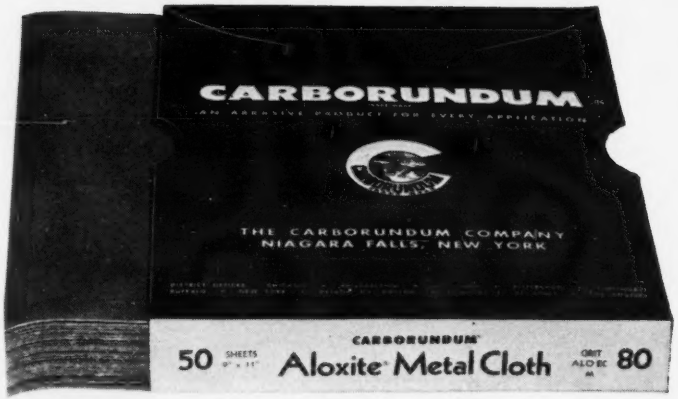


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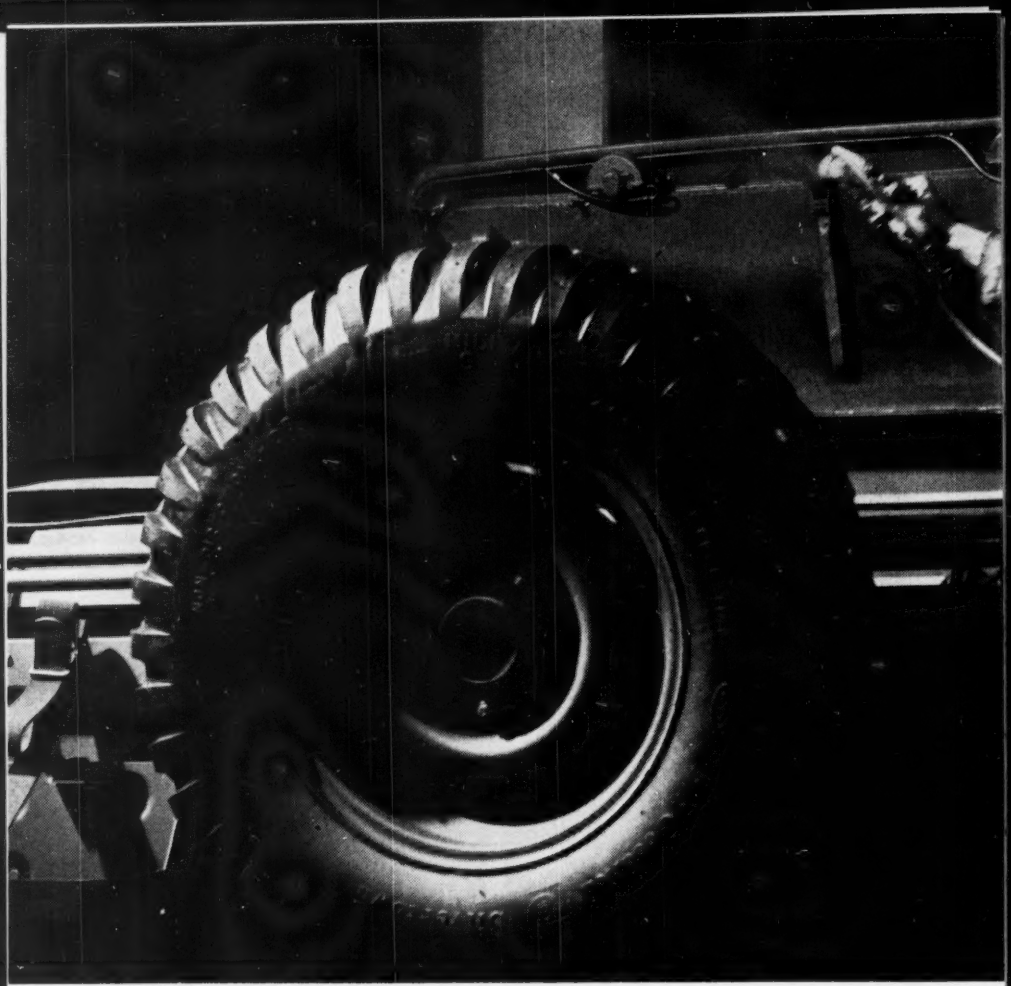

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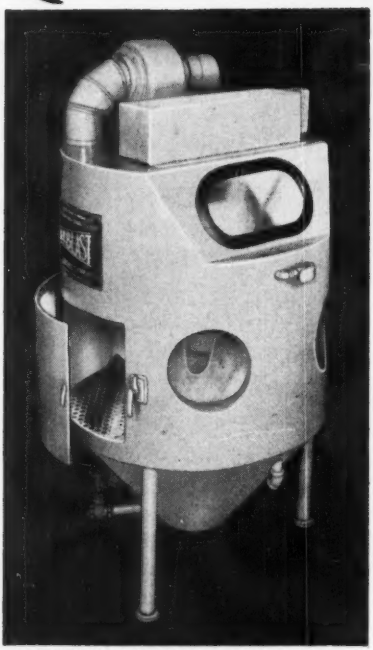

BENCH MODEL JET BLAST

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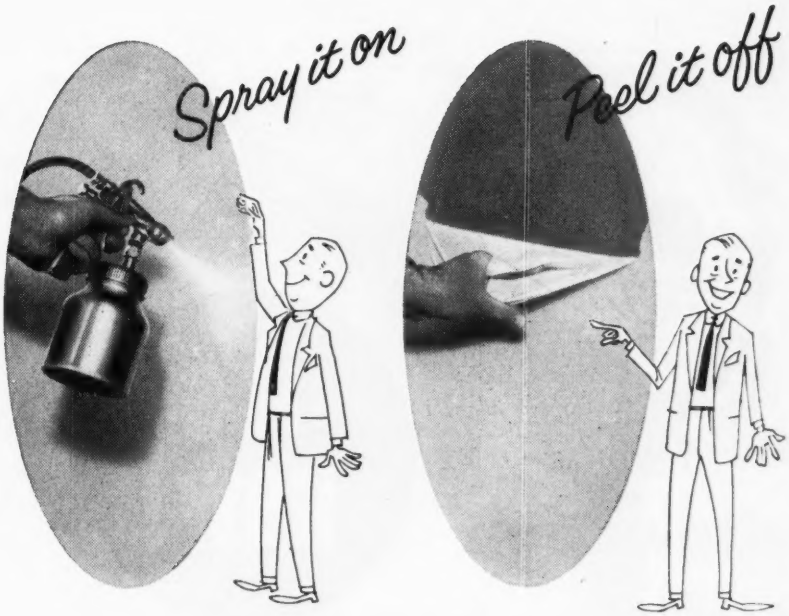


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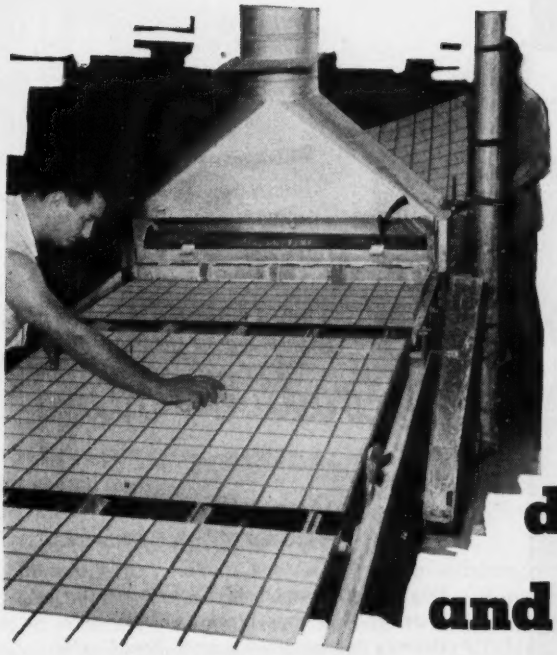

Operator sands down pips and rough spots before paneling passes between Pittsburgh brushes shown under exhaust hood.

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Pf editorial

Vol. 18, No. 9

JUNE, 1954

# The Current Emphasis On Plant Improvement

It has been estimated that 16 billion dollars will be invested this year by U. S. industry to modernize or improve plant facilities and equipment. This figure is roughly 60 per cent of the 27 billion dollars which, it is estimated, will be used in 1954 for capital expenditures.

Investigation reveals the fact that the finishing industry is undergoing a period of plant improvement perhaps second only in degree of activity to the reconversion period following the close of World War II. Examples of this trend have been reported in recent issues of PRODUCTS FINISHING.

There are a number of reasons why finishing plants, large and small, need to improve their methods and equipment at this time. The current competitive situation has brought with it the need for conveyorized polishing, buffing, cleaning, plating, and paint finishing methods wherever such are applicable, in order that production may be carried out as efficiently and economically as possible. Also, to take advantage of the many new processes and methods that have been developed over the past several years and proved in production, finishers must alter plant layouts in some cases, and secure equipment designed for the new processes.

A specific example of how the development and application of a new process has been accompanied by the design and installation of new auxiliary equipment is described in the article, "Bright Nickel Process Simplifies Bumper Manufacture," beginning on page 24 of this issue.

Although the term "automation" was coined and is used generally in connection with machining or basic manufacturing, the finishing industry has, for years, employed automatic or mechanized finishing methods. This trend will continue at an even greater pace as finishers strive to produce finer finishes more efficiently.

Ezra A. Blount

—EDITOR

# BRIGHT NICKEL PROCESS SIMPLIFIES BUMPER

**Automobile bumpers manufactured by the Sharonville Div., The Electro Auto-Lite Co., receive a heavy nickel plate to serve as a base for the final brilliant chromium plated finish. Recently, Auto-Lite engineers have added a final bright nickel plating cycle to the plating process and substituted a light nickel "wiping" operation for the nickel buffing. This change produces a better bumper, and makes possible better utilization of available nickel.**

BUMPERS for today's automobiles require a substantial electroplated finish in order to resist scuffing, abrasion, traffic wear-and-tear, and the corrosive effects of the weather and the chemicals used in clearing snow-covered streets. A heavy nickel deposit prior to the final chromium plate has been found to be essential in producing a bumper that will retain its "factory-fresh" appearance for the desired length of time. Bumpers manufactured by Auto-Lite for numerous automobile manufacturers receive a nickel and chromium plate of a minimum of 0.0015 inch in thickness. Since the chromium plate is of the order of 0.00001 to 0.00002 inch thick, the majority of the total plate thickness is nickel. This nickel deposit must withstand the high standards of the A.S.T.M. Salt Spray Test for a length of time as specified by the customer.

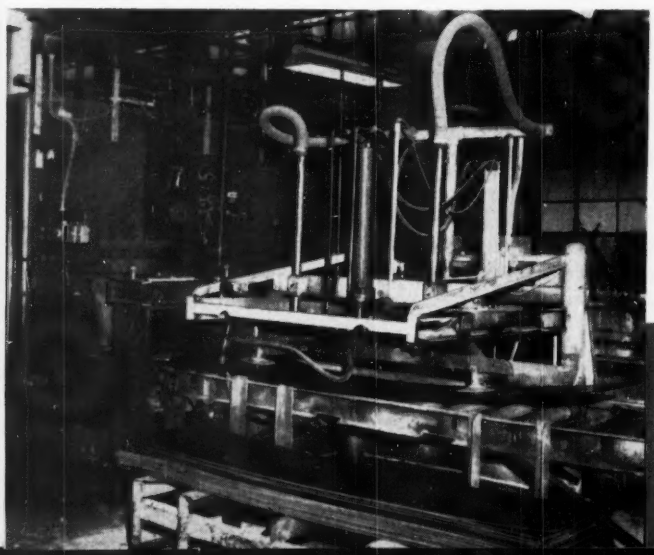


Fig. 1—Steel sheets, leveled and rough polished, are loaded onto a roller conveyor which will feed them automatically into the battery of 8 Hill-Acme abrasive belt finish polishing machines. Sheets are loaded automatically with the vacuum-loading device shown.

# MANUFACTURE

By ROBERT D. MILLER,
Chemical Engineer,
Sharonville Div., The Electric Auto-Lite Company

Robert D. Miller is a past president and member of the Board of Managers of the Cincinnati Branch, American Electroplaters' Society. He is currently serving on A.E.S. Research Project No. 15 and on Committee B-8 of the American Society for Testing Materials. He is also a member of the Electrochemical Society. A graduate chemical engineer, he has been associated with The Electric Auto-Lite Company for twenty years.

Conventional bumper manufacturing methods have specified the hard buffing of the deposited nickel to produce a smooth surface for the final chromium plate. This operation was found to remove 0.00015 to 0.0002 inch of nickel thickness, so that, in addition to the expense of the buffing operation, it consumed badly needed nickel metal that could well have been applied to other products. This buffing operation had other disadvantages, made more objectionable by reason of the irregular shapes of the many styles of bumpers. It is very difficult, if not impossible, to design automatic buffing machinery that will buff nickel plated bumpers evenly, applying the same pressure on the projections and the depressed areas as on the more regular contours of the bumper. Actual practice has been that depressed areas were missed or buffed inadequately and high spots or projections were buffed too much, or cut through, producing a rejected bumper.

Realizing the potential advantages and savings, both in cost and in utilization of scarce nickel, Auto-Lite engineers, working with Harshaw plating process engineers and equipment suppliers, have developed a plating cycle that produces a bright nickel plated bumper which requires only a light "wiping" operation prior to the final chromium plate. This development has made possible the production of a bumper covered more uniformly with protective and decorative plating, so that an even greater service life may be expected from the product than was formerly obtained. Further, in addition to the effecting of a substantial saving in nickel, the process

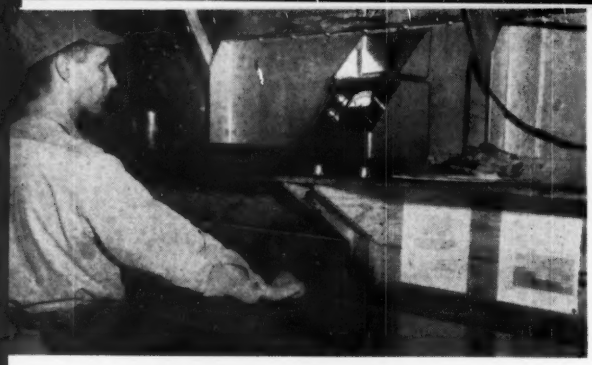


Fig. 2—A finish-polished sheet is checked for surface smoothness with a Surfindicator. By means of the statistical quality control chart mounted on his work table, the inspector can determine whether or not the polishing operation is "acceptable," or whether the operation must be interrupted for changing of some of the abrasive belts.

—which consists of a multiple plate —has achieved the additional advantage of blocking off and reducing the "thru-porosity" of the plate and thus improving substantially its corrosion resistance.*

**Polishing and Forming Bumpers**

Steel shets, 0.100 to 0.120 inch thick, from which bumpers are to be formed, are received at the Sharonville plant cut to the approximate size required to form two bumpers. Each sheet is identified on the reverse side so that it can retain its identity even after it has been assembled on a car as a finished bumper. All sheets are fed through a level-roller to produce a flat surface prior to polishing.

The first, or rough, polishing operation consists of feeding the sheets through a series of Hill-Acme sheet polishing machines employing abrasive belts of 80-120 grit size. An inspector separates acceptable sheets from blanks exhibiting "wild emery" marks or dinges, as the sheets pass out of the last operation in the series. Acceptable rough-polished sheets

* Development work conducted along similar lines relative to plated die castings has indicated that the corrosion resistance of double-copper, double-nickel, chromium composite plate on a die casting is far superior to a double-copper, single nickel, chromium plate of the same total thickness.

Fig. 3—Polished, phosphatized, and soap lubricant coated steel sheets are fed into this press, and are removed as two formed bumpers. After this first press operation follows cutting, trimming, and piercing.

are transported to the finish-polishing line, and loaded by means of the automatic, vacuum-operated loading device shown in Fig. 1, onto a power driven roller conveyor which feeds them into the finish polishing line. Finish polishing is accomplished in a battery of Hill-Acme sheet polishing machines using abrasive belts which, of course, are just a little wider than the sheets being processed. The emery belt grit sizes used range from 150 (dry) to 240 lubricated automatically with "Strapoyle" supplied by the J. C. Miller Co. The sequence of polishing operations as well as the final surface finish standards were developed through extensive laboratory work by Auto-Lite engineers.

Polished sheets leaving the finishing line are automatically transferred to a conveyor spray washer. Sample sheets are removed manually from the conveyor, following finish polishing, and surface finish measurements are made with the aid of a Surfindicator (see Fig. 2). Statistical quality control charts posted on the inspector's bench guide him in accepting the sheets or stopping the polishing line. By this operation and inspection procedure, surface finish is held below a specified RMS value, satisfactory for subsequent plating operations. This value is set and maintained so that the leveling properties of the nickel deposit are fully utilized thus eliminating the necessity of hand buffing to remove polishing marks to produce an acceptable quality part.

Polished sheets are spray washed in the 132-foot long Ransohoff tunnel washer, then rinsed, sprayed with Bonderite 110, rinsed, coated with a film of soap solution controlled with an air knife, and dried. The sheets pass through the enclosed tunnel at 45 to 50 feet per minute. The soap film serves as a lubricant during the subsequent forming operation, and the phosphate coating serves as a sponge to hold the soap film.

Coated sheets are transported to the forming press line (Fig. 3)

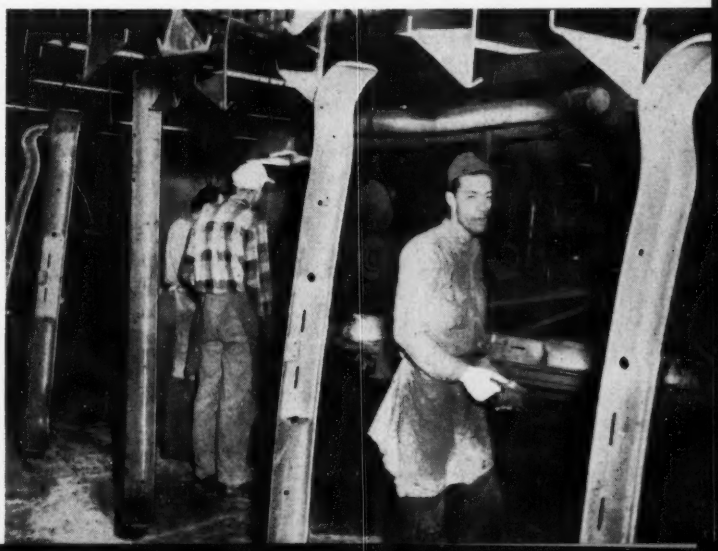


**Fig. 4—Formed bumpers which pass inspection proceed on the transport conveyor direct to the plating department. Those marked by the inspector are removed at this station for polishing on the Acme Rotary automatic polishing machine shown here, or for hand touch-up on polishing lathes.**

where each sheet is formed into two bumpers. The operations in the various presses are, successively, form, cup and pierce, bottom and top trim. Formed bumpers are hung on a transport conveyor which carries them through the polishing area to the plating department.

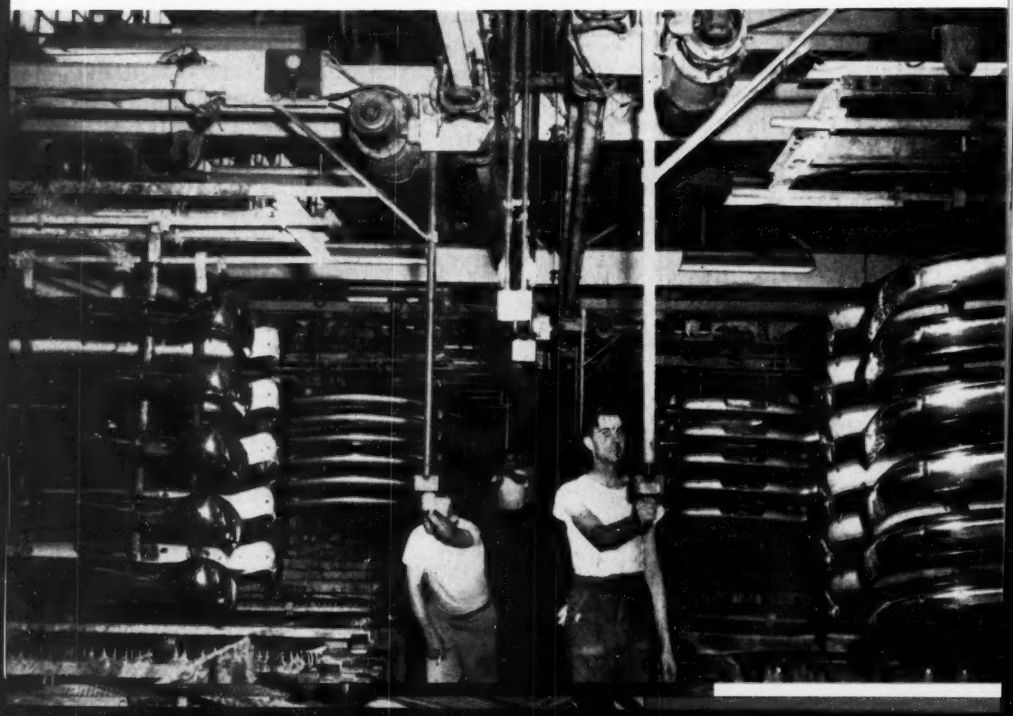
### Touch-up Polishing

Through the development of proper sheet polishing technique, the use of statistical quality control procedures, and the employment of the phosphate treatment and soap lubricant prior to forming, a great deal of the polishing formerly required on formed bumpers has been eliminated. To obtain full benefits of the new plating procedure, high maintenance and better die operation is absolutely essential so that die scratches, gall marks and other forming defects are eliminated or reduced to a minimum. Current practice is that an inspector checks bumpers as they pass his station on the transport conveyor for scratches, dinges, or die marks. Those not acceptable are removed from the conveyor and contour polished on the Acme Rotary automatic polishing machine shown in the background of Fig. 4. Further hand touch-up, if necessary, can be accomplished in the adjacent area, after which the bumpers are hung back on the transport conveyor which carries them to the plating racking area.

### Nickel Plating Cycle

Bumpers are loaded on insulated plating racks or carriers, and processed through a cleaning, pickling,

Fig. 5—As one rack of bright nickel plated bumpers is removed from the Harshaw Perglow nickel plating solution, another rack of semi-bright nickel plated bumpers is lowered into the tank. By careful cycle timing of the entire plating process, tank down time has been reduced to 15 seconds per cycle. The plating installation consists of two straight lines of tanks separated by a "working aisle." The production flow is a straight-through process, facilitated by overhead tramrail conveyors to handle the bumper carriers.



and plating cycle from which they emerge with a bright nickel finish.

1. Clean anodically in Wyandotte CSR.

2. Hot water rinse (170 to 180 deg. F.) in air-agitated solution. The tank is fitted with steam jets located on the side opposite the weir-type overflow.

3. Anodic etch in 50 to 55 deg. Baume sulfuric acid. This tank is steel, covered completely with lead, and brick lined. Lead cathodes are used.

4. Violent cold water spray rinse.

5. Strike in a Watts nickel plating solution to preserve the active steel surface and complete the rinsing operation. A standard plating solution with minor modifications which make it adaptable to Auto-Lite processing is used here. This deposit is the initial layer of multiple nickel plate.

6. Spray rinse.

7. Nickel plate in a Harshaw Perflow solution.

A major portion of the multiple nickel deposit is applied during this stage. This permits the full utilization of the leveling as well as ductility and other beneficial properties inherent in the semi-bright plate produced from this bath.

8. Plate in Harshaw Perglow bright nickel solution. The solution contains, basically, the same ingredients as the Perflow bath described in (7) above. The organic addition agents in this bath will differ somewhat from those in the Perflow but the solutions are completely compatible when used in the sequence as detailed. The thickness of bright nickel applied is determined by luster and depth of color desired. A minimum thickness that will produce this result is used here so that the greatest percentage of the total deposit will be the semi-bright nickel. In this manner the superior advantages of leveling and ductility of the Perflow nickel is utilized and is especially applicable on parts such as bumpers, which must withstand extreme service treatment for corrosion, deflections, knocks and abrasion from flying objects.

Figure 5 shows the racks of bright nickel plated bumpers being removed from the tanks.

9. Final water rinse.

10. Transfer to conveyor for unloading from racks and loading, as individual bumpers, on transport conveyor.

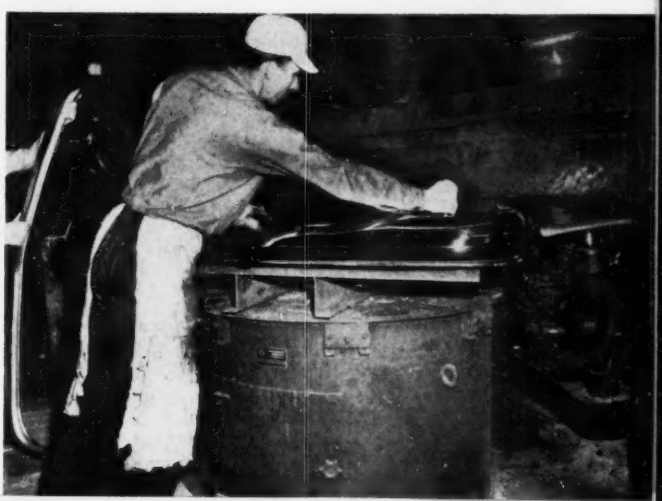


Fig. 6—Bright nickel plated bumpers receive a "wiping" operation on the Acme automatic buffing machine shown here. The bumpers rotate past a single buff, shown in the background, and this buffing arm is so designed as to apply light, even pressure to all surfaces of the bumper.

### Nickel Coloring

Nickel plated bumpers are inspected on the transport conveyor, and those requiring the operation are unloaded and processed through a "color wiping" operation on Acme Rotary automatic buffing machines specially designed for this coloring operation by Auto-Lite engineers (Fig. 6). The buffing head is composed of a number of pieced buffs with spacers. A liquid lime buffing compound is applied to the nickel plated surface. Following the light coloring or wiping operation, bumpers are replaced on the transport conveyor and conveyed to the chromium plating racking area where they are racked for plating.

### Chromium Plating

The chromium plating cycle is as follows:

1. Direct current clean in Northwest 38 alkali cleaner.
2. Water rinse.
3. Acid dip in sulfuric acid to which has been added Northwest acid addition agent AAA-No. 1.
4. Water rinse.
5. Chromium plate in a standard 100/1 ratio chromic acid-sulfate bath for sufficient time to obtain the required thickness of deposit.
6. Chromic acid reclaim rinse.
7. Hot water rinse (see Fig. 7).
8. Unrack, inspect, pack, ship.

### Control Procedures

The surface quality of the bumpers is maintained by a number of inspections made during the polishing and plating processes. First the flat sheets are inspected following the rough polishing operation. Next, 10 per cent of the sheets processed through the finish sheet polishing operation are checked with the Surfindicator to insure that the surface finish shall be within allowable tolerances as specified.

After bumpers are formed, one lot of bumpers each hour is taken directly to the plating department

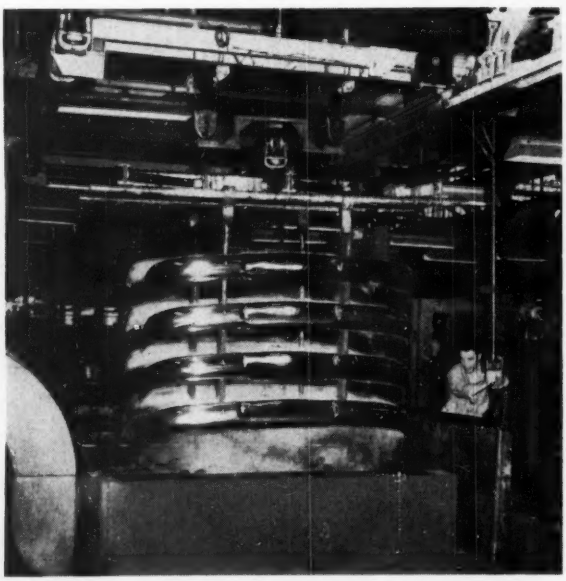


Fig. 7 — Completed bumpers emerge from the last step in the plating cycle—the final hot water rinse after chromium plating. They are then unracked, inspected, and packed for shipment.

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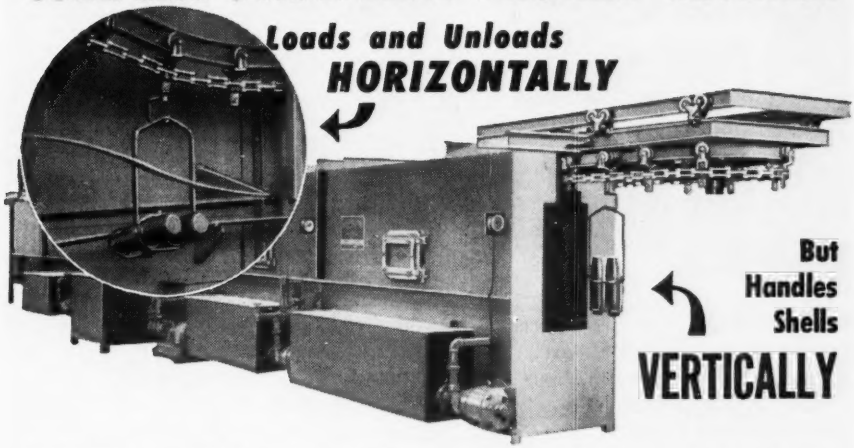


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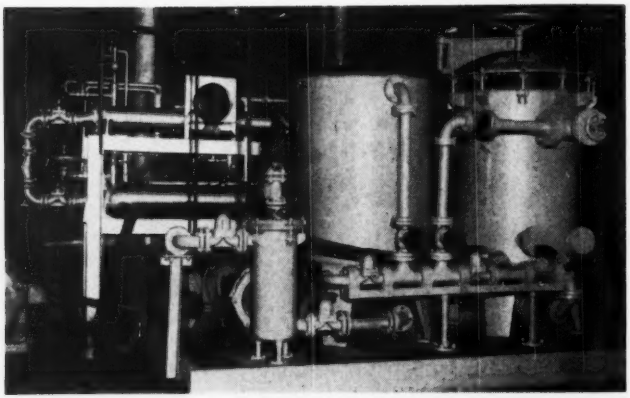

Fig. 8—One of the Industrial filter presses used to control nickel plating solution purity by continuous filtration. In the left background can be noted one of heat exchangers used to keep solution temperature at the desired point. To assist in keeping the solutions thoroughly uniform at all times, two circulation systems are employed. One system carries solution through the filters, and the other system circulates solution through the heat exchangers.

*(PRODUCTS FINISHING Staff Photos)*

and plated. This lot is then inspected critically for scratches, dinges, and die marks. as a general check on the quality being produced by the sheet polishing and forming operations.

Formed bumpers are inspected on the transport conveyor and contour or hand polished as required. Following the "color wiping" operation after nickel plating, bumpers are again inspected prior to the final chromium plate. A final inspection follows chromium plating, and all bumpers must pass that inspection before being packed for shipment.

Chemical control of the plating processes is thorough, with solution concentrations held within specified limits. In addition, temperatures are controlled automatically, and current and time controls are in use. Solution maintenance procedures keep solutions in good condition at all times. The 99 per cent rolled, carbonized nickel anodes are bagged to minimize the transfer of stray particles to the solutions, and two separate circulation systems keep the solutions clean and uniform, and at the proper temperature throughout. One circulation system circulates solution continuously through heat exchangers, and another system circulates the solution through filters (Fig. 8). In addition, periodic treatments of the solutions are made in the interest of quality plating. At Sharonville Div. of Electric Auto-Lite, no effort is spared to produce the best possible product in the most efficient manner.

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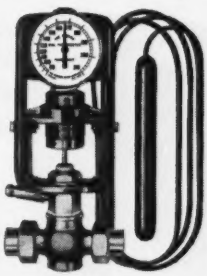

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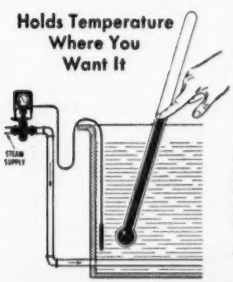


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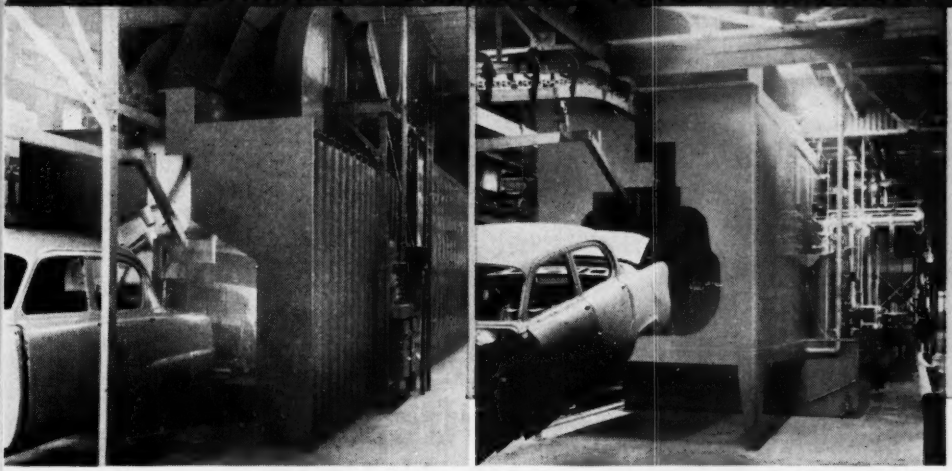

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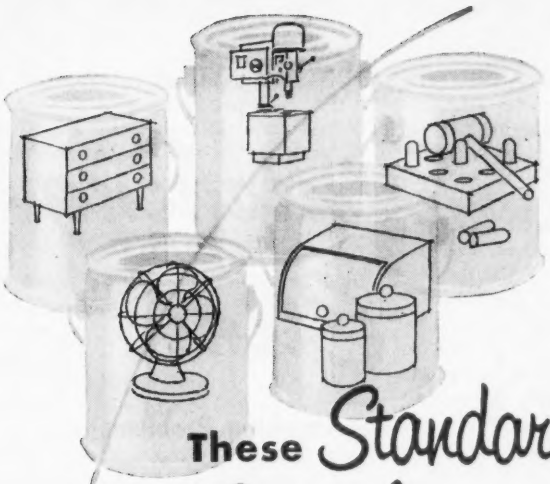

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# Finishing Clinic

**(For Finishing Problems)**

**Question.** *Our problem is obtaining a black coating on nickel silver or on nickel plated brass or steel. The black coating should be removable by either barrel tumbling or hand polishing. We should appreciate your advising us as to the equipment necessary and the process involved in obtaining the desired black on nickel finish.* *B.J.*

**Answer.** We might suggest two possibilities for obtaining satisfactory black finishes on nickel silver or on nickel plated brass or steel. The first of these involves a black nickel plating process as described in the article, "Fine Watch Dials Demand Exacting Craftsmanship in Fabrication and Finishing," published in the January, 1950, issue of PRODUCTS FINISHING. This process could be used over a nickel plated object by first applying a copper flash to the product, followed by the black nickel plate.

The second method of securing a black finish over a nickel plated surface would be to apply a thin copper or silver plate to the surface, blacken the copper or silver in any of the proprietary black dips, and then remove the undesirable portion of the black finish by tumbling or buffing.

Your plating supply and equipment sales representative can help you decide which one of these methods would be best for your use.

——— *fc* ———

**Question.** *As manufacturers of a product used out-doors, our problem is to obtain a bright polished finish which is attractive looking, yet a finish which will hold up out-doors. The products are zinc die castings. Can you recommend a suitable finish?*

*We are also contemplating casting our product in a die cast aluminum. What finish would you suggest we place on aluminum to avoid corrosion and give us out-door durability?*

*L. G. W.*

**Answer.** If it is absolutely necessary that you have a bright polished finish, then the zinc die castings would have to be nickel and chromium plated. If, however, a less brilliant finish would serve your purpose, the castings could be buffed, bright dipped, and protected with a clear lacquer or varnish coating.

In the case of die cast aluminum, generally the same comments would apply. It is quite possible that buffed aluminum, either with or without a final clear lacquer or varnish coating, would be satisfactory.

———— *fc* ————

**Question.** *Is there a compound that could be applied to the threaded portion of a part so that when the part is galvanized the zinc will adhere only to the unthreaded portion?* *J. V.*

**Answer.** There are, of course, a number of clays used by heat treaters to prevent case hardening during heat treating operations but perhaps by the very nature of galvanizing the use of such materials would not be practical in this case. It might be possible to use a threaded cap, either solid or perforated, to cover the threads during galvanizing, after which the cap could be removed without too much difficulty.

It is quite possible that the following organizations might have further suggestions concerning solutions to this problem. (Names and addresses listed.)

———— *fc* ————

**Question.** *We are experiencing considerable difficulty with "crystal spotting-out" of sulfided finishes. The parts, made of steel, are copper plated, sulfided, buffed with greaseless compound, and then coated with a baked synthetic. Similar "crystal spotting-out" is found on other sulfided parts which are merely wire brushed and coated with an air-dry lacquer. The trouble seems to occur while the items are packed in cardboard boxes. We have tried wrapping them in waxed paper, to no avail. Could you suggest a remedy for this condition, or a black coating to replace sulfide?* *R.K.*

**Answer.** This problem has caused electroplaters trouble ever since clear lacquers were first applied to plated surfaces. There are a number of ways of minimizing the difficulty, one of which is to give the sulfided surface a number of successive dips in boiling and cold water, ending up with a final hot rinse. Perhaps it may be necessary to dry the sulfided surface in a baking oven at 200 or 250 degrees F.

Naturally, the other source of difficulty is in the coating applied to the sulfided surface. Manufacturers of lacquers and synthetic finishes have given particular attention this problem and can assist in specifying a finish which will work very well.

Needless to say, the finish must be sprayed or dipped under perfect conditions of temperature and humidity. Otherwise you will have difficulty.

———— *fc* ————

**Question.** *Is there a chemical for coloring die castings without electroplating? I am interested in statuary and chocolate brown, gold tone and silver finishes.* *G.L.*

**Answer.** There are two methods which may be employed for this purpose and the results obtained will be your guide in selecting the method most suitable for your plant. Coatings of various colors may be obtained by dipping in chromate solutions supplied by a number of manufacturers.

Colored lacquers of various kinds have been formulated to simulate metallic or other appearances. For information concerning these products we suggest that you contact the paint manufacturers.

**DO YOU HAVE A FINISHING PROBLEM?**

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# Automotive Paint Processes and Equipment

By R. E. VanDEVENTER,
Chief Metallurgist,
Packard Motor Car Company

MOST new car owners undoubtedly think of the paint on their automobiles in terms of appearance. Such factors as color, gloss, and smoothness tend to obscure the engineering function of paint in protecting against corrosion. It seems almost incidental that so attractive a material can also serve such a useful purpose. Likewise, the glamour associated with the finished job tends to concentrate interest, as far as materials are concerned, in the top or color coats. The contributions made by undercoats, methods, and equipment again seem almost incidental.

Actually, the materials, methods, and equipment are almost completely interdependent. Paint technologists know that durability, in terms of both appearance and corrosion resistance, is affected substantially by the methods used, and production men know that the methods specified and equipment available are the major factors governing cost. The methods and equipment more often control selection of materials than the reverse. In an average automobile plant, well over 100 different materials will be used in painting operations, and the composition of each will be limited to some extent by methods and equipment. On the other hand, progress in materials frequently makes possible improvements in methods, and may make equipment changes mandatory if they are to be used to advantage.

This discussion will for the most part be limited to the exterior car surfaces on the body and sheet metal. The general methods in current use for the different steps of painting operations will be mentioned, with emphasis on the recent trends in associated equipment.

Prior to painting, surfaces may require metal finishing, soldering, or other preparation. This may not seem to be a part of painting, but every paint superintendent knows that there is a definite limit to surface defects that can be absorbed in the paint shop efficiently.

### Metal Surface Preparation

The actual painting operation starts with cleaning. The importance of proper cleaning cannot be overemphasized, since adhesion of the undercoats and the corrosion re-

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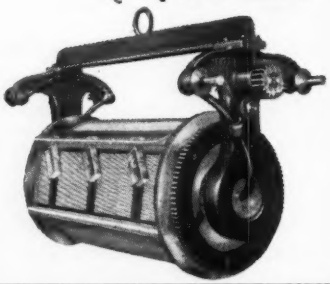

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sistance of the final job are dependent on the quality of the cleaned and treated surface. For bodies and sheet metal a fairly well standardized procedure has evolved over the years which consists of a conveyorized, fully automatic, five-stage spray operation, combining cleaning with a phosphate chemical surface treatment. Materials present on the surfaces which will not be completely removed in this operation, such as sealers, deadeners, chalk marks, heavy rust, must be removed before the parts enter this cleaning cycle. The five basic stages of the automatic operation are as follows:

1. Cleaner (1 minute, 160-180 deg. F.)
2. Hot water rinse (1 minute, 150 deg. F.)
3. Phosphate treatment (1 minute, 110-160 deg. F.)
4. Cold water rinse (½ minute unheated)
5. Chromic phosphoric acid rinse (1½ minute, 100-180 deg. F.)

In a few installations the basic five-stage cycle may be modified slightly to handle specific problems. Sometimes the rinse after cleaning is divided into two separate 30-second stages instead of a single 1-minute stage. Some installations provide for two separate cleaning stages.

Refinements have been made in recent years to both the materials and equipment associated with cleaning and chemical treatment. Cleaners have been improved for both better cleaning and as an aid in controlling the uniformity and character of the phosphate deposit. The phosphatizing chemicals have practically been standardized on the

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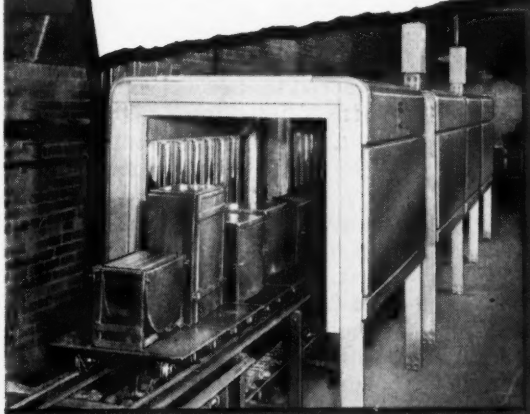

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zinc phosphate type, which forms a zinc iron phosphate crystalline coating. In general the trend has been toward lower operating temperatures of the solution because of economy of operation, and also because the maintenance problems are reduced. Accelerators may be nitrites, peroxides, or chlorides singly or in combination. Ordinarily two or three proprietary phosphatizing materials handle the standard body and sheet metal work, but special materials are available to handle combinations of steel, aluminum, and zinc through the same system where necessary, or to handle other special problems.

Equipment design has progressed along the lines of more uniform operation and lower maintenance cost. Larger and fewer spray nozzles have been found to give less trouble from plugging, and improved location and design of nozzles, together with more care in methods for handling or suspending parts for uniform treatment and drainage, have contributed to better operation. Design for better accessibility for cleaning, provisions for settling or filtering of sludge, and availability of chemical cleaning have contributed toward better maintenance. It has also been learned that ventilation of the several stages needs to be balanced for most effective and minimum cost operation.

One new factor which is being recognized is the importance of controlling the purity of the rinse water used after phosphate treatment. This also applies to water used for subsequent operations such as wet sanding on undercoats. It has been learned that excess soluble chlorides and sulfates from the water which are allowed to dry under the paint may contribute to later failures in the form of blisters. Water containing less than 150 parts per million of total chloride and sulfate ion has not been harmful. Totals in excess of 300 parts per million have definitely contributed to service difficulty. Treatment of water by deionizing methods should be considered for these operations if the soluble salts exceed the levels mentioned.

After the surfaces have been cleaned and treated it is important to keep them clean. Dirty gloves or rags, hand marks, oil drips from conveyors, residues from wiping with dirty solvent, and other forms of contamination must be avoided.

**Primer Application**

Application of undercoats on sheet

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metal may be accomplished by dip, flow-coat, or spray methods. Dip application has been most widely used in the past. Flow-coat is used in a number of plants, with the advantage compared to dipping of less paint in the system and troubles from settling being reduced. The materials are basically similar except for solvent adjustment. As compared to dipping, somewhat higher solvent losses are reported, but it is claimed that by proper solvent adjustment and replenishment more uniform thickness from top to bottom of a coated part may be possible. The film thickness of primers applied by both methods is quite low, since suitable materials have relatively low solids and pigment content, and must be operated at low viscosities for good results.

Spraying of primer on sheet metal appears to be increasing in favor. Spraying permits the use of heavier materials for a thicker film and better filling, also giving more uniform thickness over the entire surface than the other methods. In general one primer coat is adequate for the underside of fenders and hoods, and in many cases for the external surfaces also. Some plants spray a second coat on the external portion to obtain greater film thickness and to permit sanding with less cut through to metal.

Baking of sheet metal primer is deceptively simple. It is only necessary to heat the parts for a time and at a temperature required for the particular materials used, with no off-color or matching problems. However, some primers can create


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serious troubles if either under or over baked. It is easy, with some older equipment, to get both over and under baked areas on the same part. Over baking can lead to poor adhesion of top coats and brittle films, under baking to poor sanding properties and poor "hold out" of top coats. For these reasons, uniformity of temperatures in primer ovens is highly desirable and deserves serious attention.

On bodies, use of a sprayed combination primer surfacer is now almost standard. The problems of the particular body designs and individual plants dictate the number of coats, selection of materials, and special practices such as spray glazing local areas, sanding guide coats. The point in the sequence of operations where seam sealers and acoustic materials are supplied varies considerably for the same reasons.

One significant trend has been the increased attention to protection against corrosion. In most plants the interior of bodies get carefully planned treatment. The bottom of the entire body is usually sprayed all over with material formulated for corrosion protection, in addition to any acoustic treatment which may be used. The same applies to the underside of rear fenders when they are painted as a part of the body. The space between inner and outer door panels is frequently sprayed with primer surfacer through the access holes in the inner panel. In rocker panels, a special spray device is used which has a 360 degree spray pattern at the end of a pipe. This is inserted through a hole provided, and a special material sprayed into the rocker assembly interior.

Sanding practices on surfacer vary widely. On sheet metal, those plants which use one dip or flow coat of primer usually dry scuff locally for dirt only. Those plants which spray primer or use a second coat locally or all over, ordinarily wet sand by one of the practices used on bodies.

Wet sanding of primer-surfacer on bodies is universal, but here is another deceptively simple operation. Some plants sand by hand with fairly coarse paper, averaging about 240 grit. Use of mechanical sanding of the vibrating or "jitterbug" type has been fairly common for large flat surfaces, with somewhat finer paper. More recently, the development of open mesh "grit

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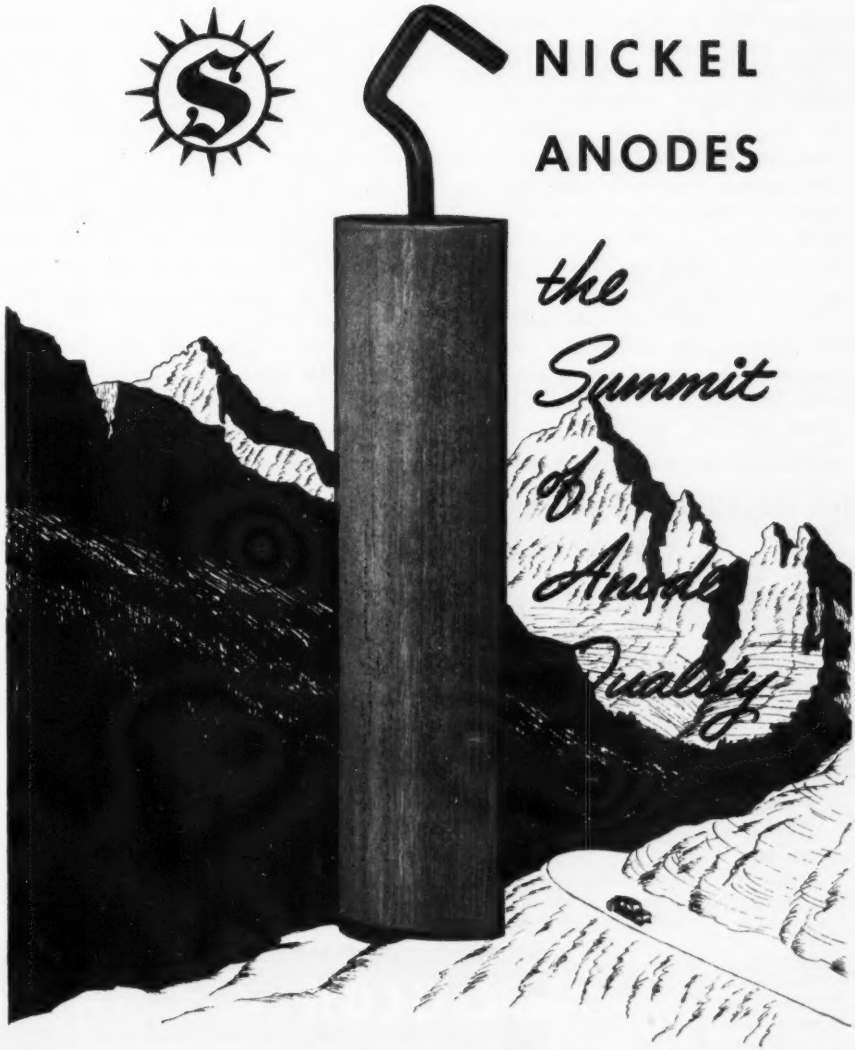


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cloth" has permitted the use of 360 or 400 grit without the former troubles from clogging on such fine grit. On reasonably flat surfaces this is used with air driven rotating wheels, of slower speed than most similar wheels used for polishing, and a soft backup pad. This development not only saves labor compared to older methods, but also the much finer grit reduces sand scratches showing through top coats. New primer surfacer materials are reported under development which show promise of producing a surface suitable for application of top coats without sanding.

Some plants which use enamel for top coats apply a "sealer" or first coat enamel over the primer surfacer, followed by baking and another sanding operation.

### Color Coat Application

Application of color coats is universally accomplished by spray methods, the number of coats and thickness varying somewhat with the materials used and the practices of individual plants. Both spray technique and spray booth design have recently been improved substantially compared to practice of earlier years, with further progress in sight.

Many of the more than 25 variables claimed to be involved in spray painting are subject to the action of the man who handles the gun. It is therefore not surprising that the major activity in spray technique is aimed at replacing the man with mechanical devices which are more reproducible. Automatic spraying has been used for several


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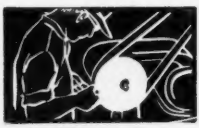

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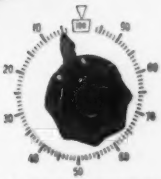

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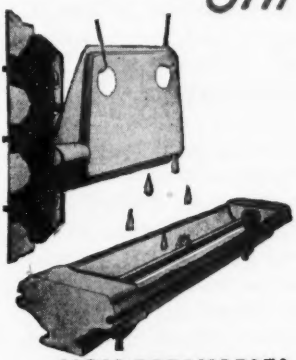

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years for primer surfacer on roofs of bodies, and more recently for color as well. Automatic spray has also been used in at least one plant for both primer and color on sheet metal. Electrostatic spray has become fairly common for moldings and small parts. It is also in use for application of primer surfacer in one body plant. Quite recently, a major advance toward automation in painting has occurred with several body plants using full mechanical spray for all exterior coats of both primer surfacer and color. Hand operations are performed around door and window openings. A decided improvement in quality in terms of uniform film thickness, appearance, and number of rejects is reported; and while cost data is not available, it is assumed the installations are justifiable economically. Several other plants are known to be either experimenting or considering installation of automatic spray facilities for some operations.

Other developments in spray techniques under consideration or in limited application include hot spray and airless atomization.

Design of spray booths has progressed simultaneously with spray technique. For bodies, down draft booths are now standard with side draft booths predominating for sheet metal. Collection of overspray by a water curtain of some description is standard. The spray booths formerly used left a great deal to be desired in control of the many factors influencing both uniformity of the painting operation and maintenance. Recent installations have incorporated higher standards of cleanliness of air supply, improved balance of ventilation, "self-cleaning" floor gratings, overspray water systems of greater efficiency, provisions for more efficient re-use of water, and other refinements. Some ventilation systems are kept in balance by pressure differential devices, so that the preferred positive air pressure in the booth is maintained regardless of filter condition.

Future trends include design improvements based on more careful analysis of air flow within the booth. Points of air supply and exhaust need review to make sure that the air flow is free from disturbances that may deposit spray or dirt. Also, it has been shown that high air velocity over the surface of a sprayed area can contribute very materially to roughness, or "orange peel," of the dried film. This is one

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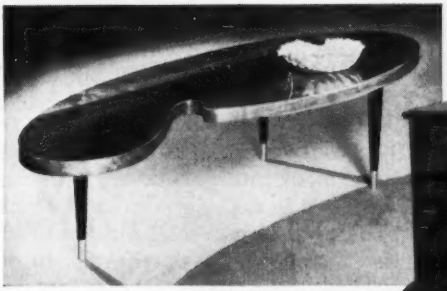

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LACQUERS
THINNERS

**RANDOLPH**
PRODUCTS COMPANY
CARLSTADT, NEW JERSEY

of the factors that deserves attention if maximum advantage is to be taken of modern solvent blends designed for better leveling.

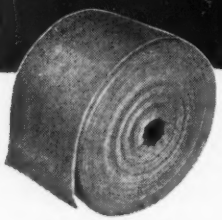
Ovens for baking color have likewise been improved. In some plants it has been found undesirable to bring the freshly sprayed paint film up to temperature too fast if best leveling is to be obtained. Some of the solvents which evaporate last greatly assist leveling, and cannot be effective if removed too rapidly. In other plants where a different solvent blend is used, there may not be the same objection to rapid initial heating rates. With some materials a case hardening of the paint film from rapid heating may make it difficult to cure the film properly.

After leaving the oven, if sanding or polishing is intended it should be remembered that the paints are thermoplastic and should be cooled substantially before such operations. To help this, a vapor cooling technique is in use where some water is introduced into compressed air and blown over the hot surfaces as a fog or mist. The water helps cooling greatly, but evaporates and does not leave the surface wet to hamper subsequent work.

To summarize, it is clear that not only are paint processes and equipment interdependent with material, but in many cases one portion of the process will have a definite effect on many of the operations. In order to produce paint jobs of the required durability at minimum cost, each part of the painting process must be carefully evaluated along with the associated equipment. Improve-

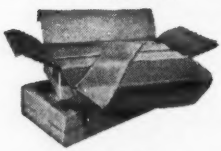

*For Dust Free Finishes!*

**BOND TACK CLOTH**



**IN ROLLS**

Cut off any size piece to use as needed.



**IN BULK**

Cut and folded. Ready to use.

**STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME**

**Now Available in Rolls or Cut Bulk—White or Gold In Three Different Types of Cloth**

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.

**TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.**

**BOND CHEMICAL PRODUCTS CO.**

*"The Tacky Wiper Specialists"*

**2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS**

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

**A WARRANTY OF SATISFACTION IN EVERY CARTON**

# ONE
man..
operating
# ONE
# INDUSTRIAL WASHING MACHINE
saves

*Labor!*
*Time!*
*Money!*

. . . No matter what your product or what your finishing problem you'll find there's an Industrial Washing Machine for the job. All Industrial machines feature

**• versatility • economy**
**• simplicity of operation**
**• low maintenance cost**

and they're especially designed to save valuable floor space.

Our engineers work hand-in-glove with you to design and produce the machine that will best suit your particular finishing needs. Write for details to Dept. L

**INDUSTRIAL Systems Company**
Exclusive Sales Agents For
**INDUSTRIAL WASHING MACHINE CORP.**
Matawan, N. J.

ments in all operations which have a part in producing a surface of the best quality prior to application of color coats can have a substantial effect on the finished job.

*Adapted for publication in PRODUCTS FINISHING from a paper presented at the SAE National Passenger Car Body and Materials Meeting, Detroit, Michigan, and reproduced by permission of the Society.*

## What's Ahead In Plating?

By DR. ALLEN G. GRAY
Technical Editor, Steel Magazine

PROCESSES required to give necessary corrosion resistance and desired surface appearance to products coming off the assembly line are fully one-third to one-fourth of a plant's total activity.

Some idea of the extent of finishing activity for 1954 may be gained from the estimate that metalworking management expects to enlarge its plant capacity by 12 per cent.

Two out of three companies expect to introduce new products in 1954. The majority of these will be civilian products and will be designed to take up expanded capacity built for producing defense goods. A large portion of the new products will be of the automatic type and will reflect technological advances.

Indications are that 1954 will be a good year for metal finishing which rides the ups and downs of manufacturing activity.

*to page 64→*

FOR ALL WET-BLAST EQUIPMENT!

PRESSURE BLAST ABRASIVES

★ EASIER TO AGITATE!
★ WILL NOT PACK!

75–5000 mesh range including aluminum oxide, quartz, silica flour, novaculite, garnet, etc.

Emulsifiers and inhibitors compounded with the abrasive . . . ready to use . . . no additives to buy or mix.

For use in all makes of wet-blast equipment.

Packaged in sturdy, fiber-board drums . . . 50 lbs., just right for a single operating charge.

Available from stock in all principal cities of U.S. and Canada . . . no freight charges.

Write for further information and the name of your nearest Pressure Blast distributor.

★ Developed by the manufacturers of Pressure-Blast wet-blasting equipment.

the CRO-PLATE Company, Incorporated

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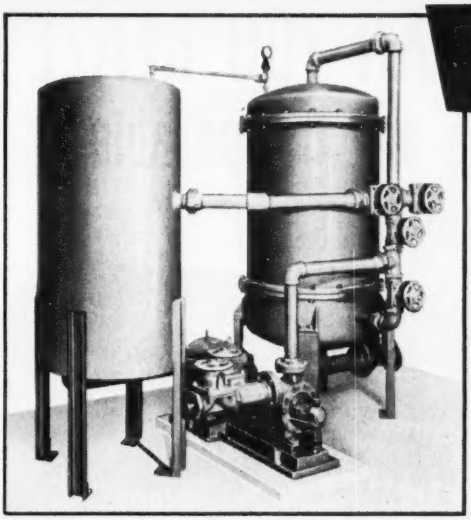
# WAGNER BROTHERS FILTERS OFFER



## DOUBLE ECONOMY

## LOW OPERATING COST
## LOW MAINTENANCE COST

**Consider two factors before you specify filtering equipment:**

**1** The gallons of solution which can be efficiently filtered in a given period of time.

**2** The cost of maintaining the filtering mechanism.

It's an established fact that Wagner Brothers Filters have a higher effective flow rate than any other equipment with *equal filtration area* . . . thus, gallon for gallon, it delivers *more* pure filtrate *per hour* at a lower unit cost. Sludge and other impurities (down to 1/10 micron) injurious to your plating quality are removed when the bath or solution is pumped through permanent membranes caked with a few cents worth of filter-aid (diatomaceous earth).

To clean, you simply turn a few valves and reverse the flow. Air bump backwash shocks the caked filter-aid from the membranes and through the sludge drain. Maintenance costs are reduced to ½ that of ordinary industrial filters since there is no messy replacement of bags, sheets or pads, no manual cleaning labor, no dismantling.

Standard models are available in capacities from 560 GPH up, filter areas from 3 to 100 square feet.

We design and build specials to suit your requirements. Write for detailed information and filtering questionnaire. If you're a plating equipment distributor, ask about territories open.

**Your *primary* source for plating and polishing equipment and supplies.**

Wagner **BROTHERS INC.**

**432 MIDLAND AVE. • DETROIT 3, MICHIGAN**

Chicago • Rochester • Cleveland • Cincinnati • St. Louis • Indianapolis • New York

# ACTUAL PRODUCTION RUNS PROVE NEW EGYPTIAN 700 GLAZE

## Out-Performs any Comparable Finishing System*

Wherever there is a Casting to Finish

New Freer Sanding — Faster Drying

EGYPTIAN 700 GLAZE

Brings Amazing Finishing-Room Economies

Still Retaining the

• DURABILITY • ADHESION • APPEARANCE

• IMPACT RESISTANCE

of Slower Drying Systems

*Facts from Egyptian New Product Field Report

EGYPTIAN Industrial Finishes

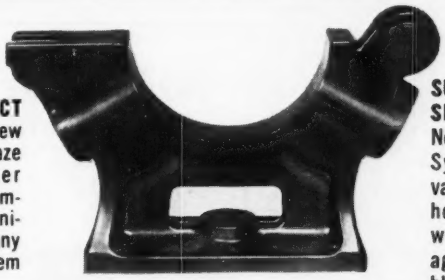
**The EGYPTIAN LACQUER MANUFACTURING COMPANY**

BOX 444, NEWARK 1, NEW JERSEY

EXECUTIVE OFFICES, ROCKEFELLER CENTER, N. Y. • Plants: South Kearny, N. J.—Lafayette, Ind.

## NOTE THE ADVANTAGES OF NEW EGYPTIAN 700 SYSTEM

(PRIMER-GLAZE-ENAMEL)



**GREATER IMPACT RESISTANCE*** New Egyptian 700 Glaze showed greater resistance to impact and mechanical abuse than any comparable system tried.

**SUPERIOR ADHESION QUALITIES*** New Egyptian 700 System showed vastly superior adhesion qualities when checked against comparable systems.

**EVEN FREER SANDING*** New Egyptian 700 Glaze proved to be even freer sanding than comparable systems. Need for coarse sanding eliminated. Sanding is done with #100 and #150 paper. Most small castings require no sanding.

**EVEN FASTER DRYING*** New Egyptian 700 Glaze dried even faster than comparable systems making speed drying their basic claim to merit. In cases of exceptional rush, Glazed Work was satisfactorily sanded within an hour after application.

**NO TENDENCY TO PULL OR ROLL*** Egyptian 700 Glaze is unusually easy to apply by knife. Remains soft and workable for as many as 40 knife strokes. Shows no tendency to pull or roll. This remarkable workability makes it easy to Glaze large areas without showing lap marks.

**SPRAY, BRUSH OR GLAZE*** New Egyptian 700 Glaze can be sprayed, brushed or glazed with equally fine results, bringing a high degree of versatility to your finishing room equipment.

**Your Egyptian Industrial Finishes Specialist is anxious to show you how the NEW EGYPTIAN 700 SYSTEM can cut your costs of finishing Castings, Machine Tools and Fabricated Metals without cutting quality. No obligation of course.**

**SAVE TIME USE THIS COUPON**

**EGYPTIAN LACQUER MFG. CO.**
**Box 444, Newark 1, New Jersey**

☐ Forward More Detailed Information.
☐ Have Egyptian Industrial Finishes Specialist call.

*Show me how NEW EGYPTIAN 700 GLAZE can cut my Finishing Costs and still retain the Qualities of Slower Drying Finishes.*

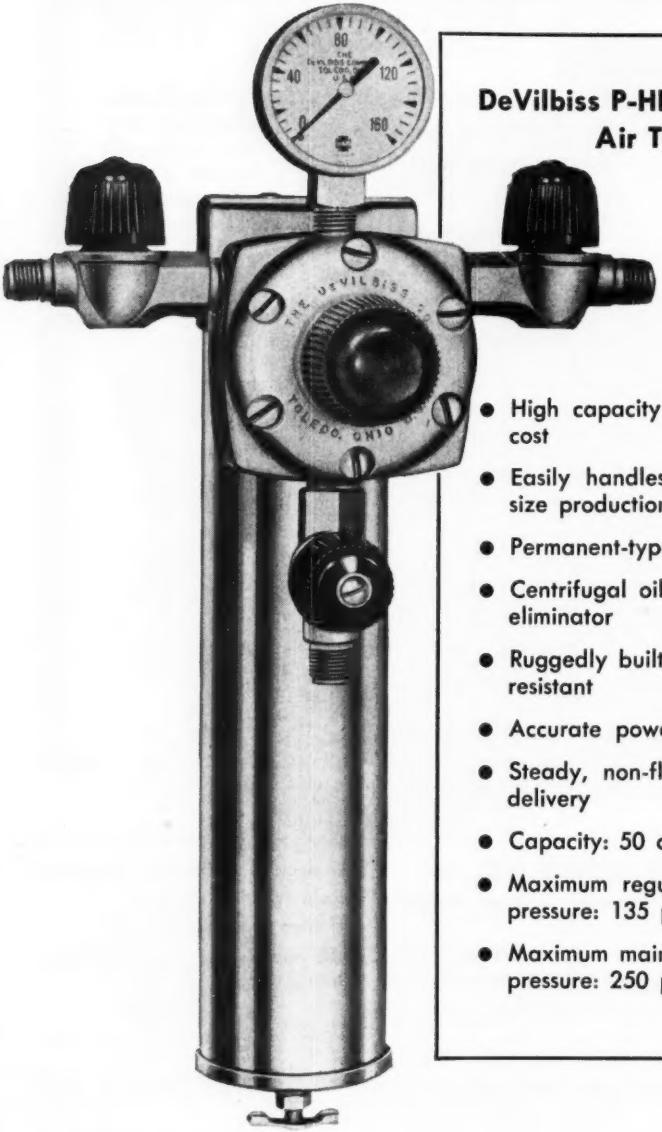
Name.....

Company.....

Street.....

City.....State.....

# New! Large-capacity, low-




**DeVilbiss P-HLE**
**Air Transformer**

- High capacity — yet low in cost
- Easily handles two largest size production guns
- Permanent-type filter
- Centrifugal oil-and-water eliminator
- Ruggedly built; corrosion resistant
- Accurate power regulator
- Steady, non-fluctuating air delivery
- Capacity: 50 cfm
- Maximum regulated pressure: 135 psi
- Maximum main-line pressure: 250 psi

# cost DeVilbiss Air Transformer

**No more choked-up filters that starve air lines! Permanent filter on new P-HLE Air Transformer eliminates frequent checking and changing filter packs, lowers rejects!**

Have better sprayed finishes! New DeVilbiss Air Transformer gives you clean, dry air without the efficiency drop that is characteristic of disposable-type filters. It provides continuous maximum spray-gun performance, accurate air-pressure control – yet is low in price!

### Clean Finishes

Permanent-type filter and centrifugal oil-and-water eliminator end blemished finishes caused by air-line contamination.

### Accurate Control

Built-in precision power regulator gives smooth, uniform air delivery, fingertip control. The P-HLE supplies air at exact pressures for two largest size production guns.

### Use as Air Condenser

In applications not calling for pressure regulation, the P-HLE is available modified as a condenser (Model P-HRE) to trap dirt, oil, water or other foreign matter in the air line.

### Call Your Jobber

Call your DeVilbiss jobber, today, for details on the new DeVilbiss P-HLE Air Transformer – and data on spray booths, air compressors, spray guns, hose and connections to go with it. Or write us direct for free literature.

**THE DEVILBISS COMPANY,**
**Toledo, Ohio**

Santa Clara, Calif. • Barrie, Ontario
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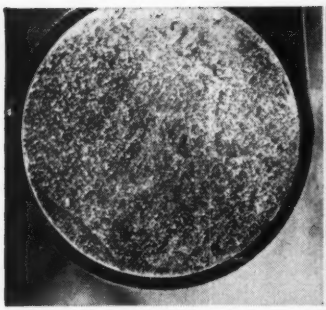
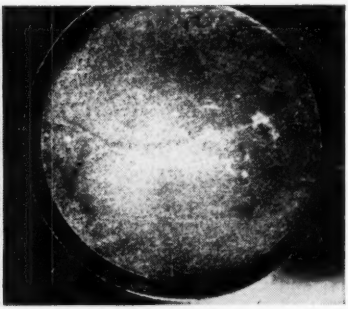
FOR BETTER SERVICE, BUY
DEVILBISS

*BRANCH OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT THE UNITED STATES, CANADA AND THE WORLD*



Macrograph of chromium plated steel rod, plated in ordinary solution for 16 hours. Deposit built-up to 0.016″ on radius.



Plating in SRHS Solution, under identical conditions, built-up a 0.0225″ deposit—over 40% more. Such speed cuts cost.

# Are you taking advantage of these many ways to cut plating expenses?

*Savings in time, labor, materials, and equipment are made possible with United Chromium's aid*

A LEADER in the fight against high finishing costs is United Chromium which has developed many ways to make plating operations more efficient and profitable.

## WAYS TO SAVE IN CHROMIUM PLATING

Chromium plating costs can be cut by *reducing* salts consumption, power needs, lost production time, rejects, and special racking procedures – and by *increasing* plating speed and tank load size.

All these methods of cost reduction are made possible through high-speed self-regulating chromium plating systems developed by United Chromium. Enthusiastic reports from the field say the SRHS systems not only save money but improve plating quality. They cut plating time up to half, minimize misses and burns, use economical concentrations, remain in top plating balance.

## WAYS TO SAVE IN COPPER PLATING

Major opportunities for reducing copper plating expense lie in ending or simplifying buffing by depositing a more uniform plate. Reducing the need for treating of the plating wastes can also save. Faster plating helps, too.

New addition agents for use with Unichrome Pyrophosphate Copper have eliminated buffing for many users, made it easier for others who prefer to buff copper rather than base metal or subsequent deposits. Plating speed has been increased – by as much as 20% in some cases. Costs for waste disposal facilities are also being cut because the bath contains no cyanide.

## WAYS TO SAVE ON NICKEL PLATING

Decreasing the rate of chromium rejects due to nickel passivity, reducing downtime for purification of nickel solutions, and using more stable addition agents

are important means for lowering bright nickel costs.

Unichrome Bright Nickel was developed especially for these characteristics. In 4 years of actual commercial operations, it has proved that its greater receptivity for chromium deposits, more stable addition agents, and exceptional tolerance for impurities do cut costs.

## THE WAY TO SAVE ON ANODES

A chromium plating anode lasts longer when its entire surface is active – even that part facing the tank lining. This not only avoids costly corrosion, but also helps improve current distribution, reduce misplates.

Round shape provides greater anode activity.

A new development delivers such performance. Unichrome Round Anodes offer greater anode activity and therefore longer, more economical service. With cylindrical and more rigid design, they can end warpage problems and distribute current better.

## THE WAY TO SAVE ON RACK COATINGS

Plastisol rack coating builds up substantial body and resiliency and offers longest service. Also easier and more economical to apply, it provides a positive means for lowering costs.

In its many years of use, Unichrome Coating 218X has established a remarkable record for economy. It defies all plating and cleaning solutions, even vapor degreasing cycles. It guards against solution contamination, won't chip, crack, blister or form pockets.

## WAYS TO SAVE ON CHROMATE TREATING

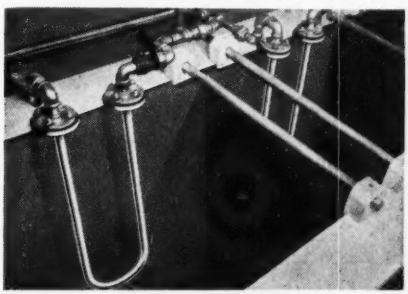
Economy in chromate treating comes from using the process best suited to requirements of manual or automatic processing, size of production, equipment available, and type of finish.

With a complete line for treating zinc and cadmium offered by United Chromium for clear, black, olive drab, yellow and even brass colored finishes – the right process for the need can be found.

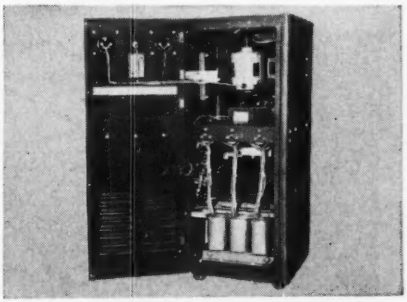
* * * * *

For more information write your nearest United Chromium office.

ECONOMY IN HEATING—A Unichrome Tantalum Heating Coil like below paid for itself in 6 months by eliminating former down-time and maintenance with lead coil in chromium solution.



ECONOMY IN CURRENT SUPPLY. Interior of a Unichrome Rectifier gives good evidence of superior quality that assures dependable, economical power year after year.



**UNITED CHROMIUM, INCORPORATED**

100 East 42nd Street, New York 17, N. Y. • Detroit 20, Mich. • Waterbury 20, Conn.

Chicago 4, Ill. • Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

The year 1953 set many new records in metalworking business activity:

Gross national product climbed to $367 billion—$20 billion higher than the former peak.

National income was $305 billion —$14 billion above the prior high.

Manufacturers' sales of metal products topped $126 billion—nearly double the 1949 dollar volume and more than seven times the 1939 total.

Steel ingot output rose to 111.6 million tons — over 7 million tons more than the previous year.

New plant and equipment expenditures were nearly $28 billion, a new high.

More persons, about 63 million, were at work at the highest wages ever paid.

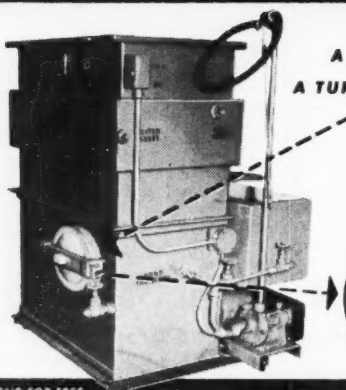
In 1953 nickel was decontrolled. But the hard facts are that decontrol did not add a single pound of nickel to the total U. S. supply. There just won't be enough nickel to go around to all non-military consumers of nickel in this country for some time to come.

All indications point to the intention of manufacturers to get out a better looking product in 1954. That means more bright work for the added gleam. Competition is here. Consumers are becoming more cost and quality conscious, asking for better finishes and a wider choice of colors and types.

Suppliers stand ready to do their share with improved plating machines and better baths.

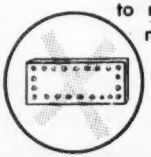
The problem is one of being able to turn out more good bright work


YOU'LL SAVE COSTLY HOURS OF LABOR
WITH RAMCO® 1-BOLT ACTION DOOR
ON RAMCO VAPOR DEGREASERS
MANUALLY OPERATED, CONVEYORIZED POWER WASHERS



A TWIST!
A TURN!
...IT'S OPEN IN JUST 5 SECONDS!

Note cross section above showing how Ramco 1-Bolt design makes possible 100% drainage; traps all sludge in easy-to-clean pocket. Cuts down gasket replacement. No need to remove steam coil and door; no need to disconnect steam lines.



SEE US AT AES CONVENTION, JULY 12-15, HOTEL STATLER, VILLAGE ROOM

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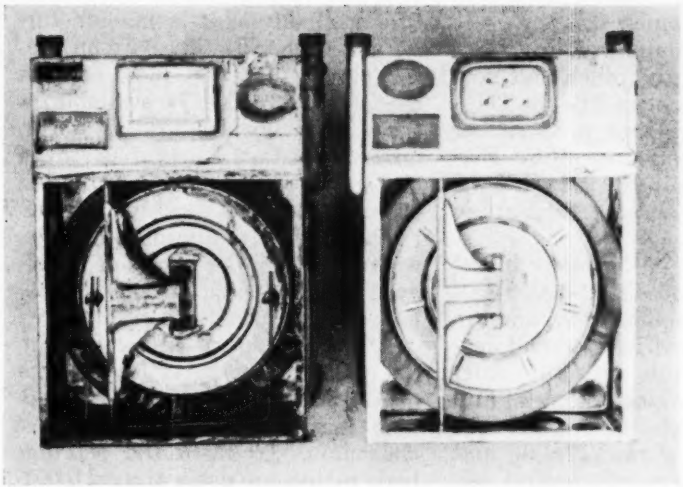
RAMCO



**300 METERS A DAY** are cleaned in this conveyorized degreaser. "Triclene" D vapors clean thoroughly—leave meters warm and dry, instantly ready for inspection.

**TYPICAL RESULTS** obtained from vapor degreasing with "Triclene" D. Note the thorough cleaning received by both metal housing and leather diaphragm.

# Vapor degreasing with TRICLENE® D cuts costs (*Trichlorethylene*) of meter maintenance for Brooklyn Union Gas Company

**BOTH METER AND LEATHER DIAPHRAGM THOROUGHLY CLEANED IN ONE FAST OPERATION!**

ONE maintenance problem faced by Brooklyn Union Gas Company is the periodic reconditioning of its gas meters in service throughout Queens and Brooklyn, New York. Each gas meter has a soft leather diaphragm which measures gas consumption. In time it picks up oils and gums—becomes sluggish and unreliable. To keep the diaphragm performing accurately demands close inspection and cleaning. This used to require removal of the diaphragm from the meter—a particularly time-consuming job, since the diaphragm is soldered to the meter housing.

Vapor degreasing with "Triclene" D changed all that. Now the entire meter assembly, including the diaphragm, is cleaned as a unit! "Triclene" D does such a thorough job that original softness and pliability are restored to the diaphragms—and they can be inspected *right in the meters*. The only time a diaphragm is removed is when a replacement is needed. And many which would have been formerly discarded are found serviceable. A big saving in time, labor, and material!

Find out what vapor degreasing with "Triclene" D can do for you. The coupon will bring you complete information from Du Pont, pioneer manufacturer of degreasing solvents. And for expert technical assistance in metal cleaning, just get in touch with our nearest district office.

**DISTRICT OFFICES:** *Boston . . . Chicago . . . Cincinnati . . . Cleveland . . . Detroit . . . Charlotte . . . El Monte (Calif.) . . . New York . . . Philadelphia.*

**"TRICLENE" D**

(*Trichlorethylene*)

**the Rugged Degreasing Solvent**

DU PONT

REG. U.S. PAT. OFF.

**BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY***

***SEND IN THIS COUPON FOR FREE BOOKLETS***

E. I. du Pont de Nemours & Co. (Inc.), PF-64
Electrochemicals Department, Wilmington 98, Delaware

*Please send me the literature checked below:*

- ☐ "How trichlorethylene is used in metal cleaning."
- ☐ "Triclene" D—an improved vapor degreasing solvent.
- ☐ "Metal degreasing—standard practices."
- ☐ Du Pont publication, "MODERN METAL FINISHING." (Please add my name to the mailing list.)

Name_____ Position_____

Firm_____

Address_____

City_____ State_____

with the nickel pinch still on.

Here's an example of one company caught in the pinch and how they met the problem. It's the Daystrom Corp., a large producer of nickel-chrome plated furniture. Sixty different furniture parts — some 100,000 lineal feet of tubing are plated daily.

At the Olean, N. Y. plant, nickel plating took place in a 40,000 gallon plating machine. Chromium plating was done in a second machine. To comply with the order limiting nickel thickness to 50 millionths of an inch, the original 285-foot race track shaped plating unit was broken down into several sections for plating 0.00075-inch of copper, 0.00005-inch of nickel and 0.00003-inch of chromium. Copper is plated for about 14 minutes using an advanced type cyanide bath, the nickel flash takes 42 seconds. Chromium plating requires 3 minutes.

Operations have been so satisfactory for the past two years that management at Daystrom doubts whether they will ever go back to full nickel plating. The feeling is that as nickel shortage eases they would go to perhaps 0.0003 inches of nickel on top of the copper.

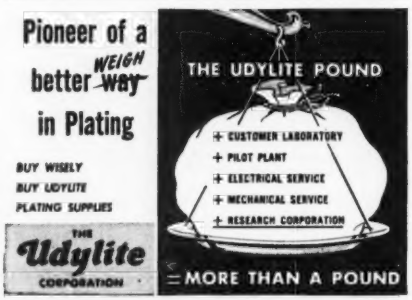
With the long range nickel picture as cloudy as it is, manufacturers will have to lean heavily on copper plating plus the most efficient use of what nickel is available to them. This not only means thickness-wise, but the use of the most modern nickel baths to give optimum characteristics in deposits. Modification of parts to minimize deep recesses will improve corrosion resistance by increasing minimum thickness of the nickel deposit.

A specification used for chromium plated steel parts for outdoor use is 0.0007-inch copper, 0.0006-inch nickel and 0.00001-inch of chromium. To meet the shortage here, platers are using around 0.001-inch of copper and 0.0002 to 0.0003-inch of nickel (depending on what they have in the house) followed by chromium.

Extensive research on copper plating has resulted in specialized baths for fully bright deposits, for leveling ability, for easy buffing and for better plate distribution. Industry is making more use of operating refinements such as diaphragms to control roughness of deposits, special current techniques, higher rates of solution circulation, and so on.

The makeup of large cyanide copper plating baths is facilitated in some cases by shipment of solution concentrate in tank car quantities. This minimizes labor of handling large quantities of the separate bath constituents and reduces possibility of errors in makeup.

Zinc deposits can be plated fully bright and kept so for extended periods by means of brightening and passivating treatments, thus extending the usefulness and attractiveness of these coatings.

# FILTER OUT your plating troubles!

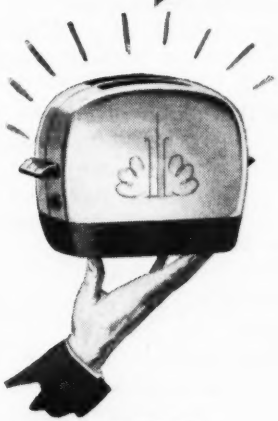
Take good care of your plating solution and you'll get better work out of it; brighter coatings, improved adhesion, less loss of costly anode metal.

## *Start CLEAN... Stay CLEAN*

Baby your bath, by filtering it regularly with Red Label Darco S-51, the activated carbon made especially for electroplaters. Darco is the efficient and economical way to remove trouble-making impurities. It contains no traces of sulphides that can cause dullness, brittleness or poor adhesion.

Be sure to specify Red Label Darco S-51 by name. Get it from your supplier in convenient 10-lb. and 50-lb. packages.

*Write for a copy of the article, "Filter Out Your Plating Rejects."*



**DARCO DEPARTMENT**
ATLAS POWDER COMPANY
Darco General Sales Offices
60 East 42nd Street, New York 17, N. Y.
Atlas Powder Company, Canada, Ltd., Brantford, Canada

Copper chromium coatings with or without baked enamels will continue for some applications including home appliances, tubular furniture and perhaps interior automobile trim.

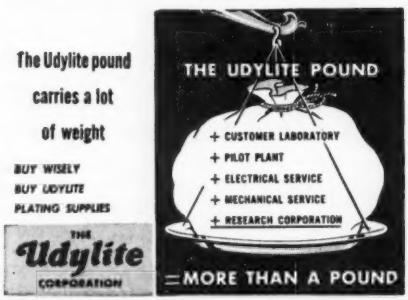
It's a good idea to check the thickness of chromium on copper if the same cycle is being used as was employed for plating chromium over bright nickel. Some platers have reported that it is necessary to use a slightly longer plating time to get the same thickness of chromium over copper as compared with chromium over nickel.

White brass has been found useful. Future applications will depend on results of experimental work to reduce the brittleness of the plate and minimize formation of white corrosion products. Successful applications generally have been on small parts, screws, washers, and so on, formerly barrel nickel-chromium plated.

Several tin alloys look promising as substitutes for nickel.

Here's how some manufacturers are living with the nickel shortage:

1. Copper Substituted for Two-thirds of the Nickel:
   Typical: 0.001-inch copper
   0.0002-inch nickel
   0.00001-inch chromium
2. Medium Copper with Thin Nickel with or without Clear Enamel:
   Typical: 0.0005-inch copper
   0.0002-inch nickel
   0.00001-inch chromium
   0.001-inch clear enamel
3. Heavy Copper with Nickel Flash with or without Clear Enamel:
   Typical: 0.001-inch copper
   0.00005-inch nickel flash
   0.000001-inch chromium
   0.0005-inch clear enamel
4. Copper Followed by Chromium and Clear Enamel:
   Typical. 0.001-inch copper
   0.00002-inch chromium
   0.0005-inch clear enamel
5. Zinc Plate Followed by Chromate Bright Dip and Clear Enamel:
   Typical: 0.0003-0.0005-inch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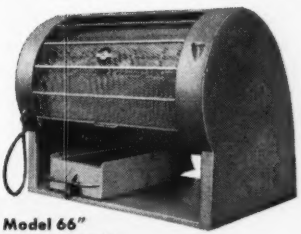
Get a superior finish on metal parts with Super-Brite chips and compounds employed in the Grav-i-Flo Tumbling Process. These materials cut faster, eliminate need of transferring parts between roughing and finishing, and end subsequent operations such as ball burnishing.

Grav-i-Flo cuts direct labor costs, too. Hundreds of companies are getting better finishing and deburring results, faster and cheaper. Check these advantages to improve your competitive position today!

## Grav-i-Flo Offers Complete Equipment and Supplies For All Your Tumbling Needs!

***Machines***—5 sizes—66″, 48″, 36″, 32″ and 24″. Cam locked doors with safety stop; unlined or rubber lined; constant or variable speed; J.I.C. controls; timers 5 min. to 20 hrs.; electric wiring and water piping.



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Two compartments

***Compounds***—Natural and synthetic deburring and finishing chips and highly developed compounds outperform every type of tumbling process offered.

***Accessories*** — Separator and chip grader, hoist pans, chip pans, washout doors, screens, chip bins, unloading boots, dip tanks.

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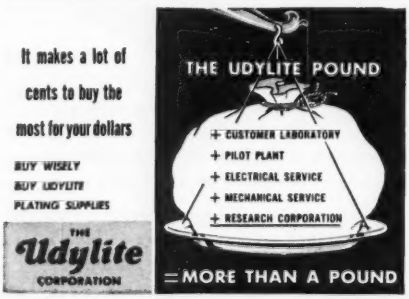
zinc
chromate bright dip
0.0005-inch clear
enamel

Increased plating costs are being met by giving careful attention to various phases of finishing operations—such as more efficient automatic polishing and plating equipment. Parts are tumbled in bulk to give a commercial finish after plating. Plating processes are chosen to reduce polishing or buffing required.

By taking advantage of technical improvements in finishing processes, methods and equipment, platers can continue to turn out durable and attractive finishes, economically, in the years ahead.

*Adapted for publication in PRODUCTS FINISHING from a talk delivered at the 42nd Annual Educational Session, Chicago Branch, American Electroplaters' Society.*

"I just ran a test, sir, and from here on they're dry."

**The new, 16-story Hotel Statler now under way in Hartford, Conn., will combine glass and porcelain-faced Seaporclad curtain wall panels to produce a striking ultra-modern exterior. Use of the curtain panel, only one-and-a-half inches thick, will give the 455-all-outside-rooms hotel a gain of nearly a foot of extra space per room over conventional 12-inch thick masonry walls. Fabricated by Seaporcel Metals, Inc., Long Island City, N. Y., porcelain manufacturer, the panel is composed of a fiber glass core sandwiched between two asbestos "transite" cement boards, with one side laminated to porcelain steel facing. The light (4½ pounds per square foot) and unusually strong material, which will be finished in a dark green color mottled with light green, is rust-free, color-permanent, easy to handle and can be cleaned with only soap and water. Approximately 18,000 square feet of porcelain, in panels two feet wide and varying in height from three to seven feet, will be utilized.**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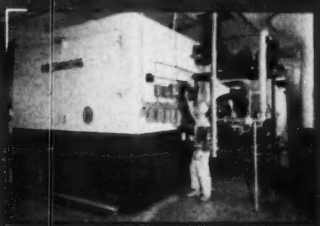
**KEYSTONE EMERY MILLS** *Write for Sample* **4316 Paul St., Phila., Pa.**

# DESPATCH OVEN TRIPLES SIGN PRODUCTION AT NAEGELE ADV. CO.

Despatch Water Wash Spray Booth cleans paint laden air . . . removes vapor laden fumes . . . eliminates most of labor and "down time" for cleaning.



The progressive Naegele Advertising Co., Minneapolis recently "at home" in greatly enlarged quarters, is creating and producing painted bulletins, highway and commercial units of all types faster than ever before. Production increases of 3 to 4 times were realized when, for finish baking, the company replaced infra-red light banks with a Despatch Finish Bake Oven of the double-end opening, batch type. Quality also is greatly improved because the oven produces a much harder paint finish. Operating at a controlled temperature of 250° F., the signs are baked for ½ hour on the prime coat and each succeeding color coat of enamel. Using lights, the drying time for similar work required 4 to 5 hours. Now 300 to 400, 3′ x 8′ bulletin panels are run per day while under previous methods only 80 per day were possible.

In conjunction with the oven, a Despatch Water Wash Spray Booth is employed. It measures 12′ wide, 8′ deep with 6′ added extension panels. Water curtain is operated by a 480 GPM circulating pump.

## FINISHING PROBLEM? —*CALL DESPATCH*

Despatch Finishing Systems are designed and built to finish your product better, faster and more economically. You can get a complete system or individual units, such as: Bake Ovens, Dry-off Ovens, Spray Booths, Washers, Flow Coaters, Conveyors, Air Make-up Systems. Resident engineers located in your vicinity are ready to help you with your finishing problems. Write to Dept. E.

DESPATCH OVEN COMPANY

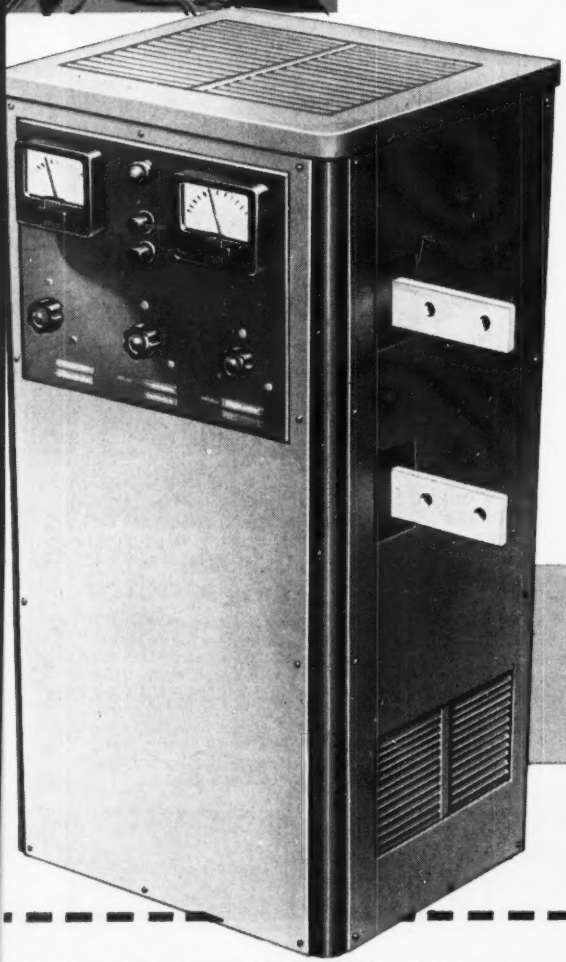
ONE UNIT OR A COMPLETE FINISHING SYSTEM

# Many hands lighten the load... AND

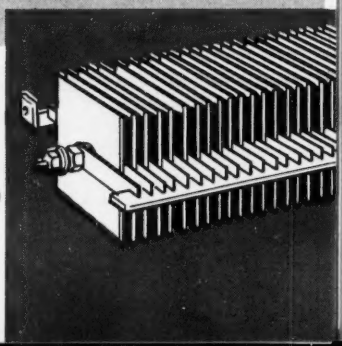
## WAGNER RECTIFIERS' 40% INCREASED STACK AREA PREVENTS OVERLOAD

Electrical overloads and over-heating are avoided by ample rectifying stack area. The *new* Wagner Brothers selenium rectifiers offer you an *unprecedented* 5.4 square inches of rectifying surface per ampere. We've always rated conservatively, as the year-after-year performance of our previous models will testify. But this 40% increase sets new standards of operating efficiency and reduces your maintenance costs to a record low in electroplating history.

**PEAK EFFICIENCY**— Excess heating greatly decreases rectifier service life. This conservative Wagner stack design, more plates, greater surface, avoids high temperatures. And in addition, thermal overloads on magnetic contractors protect the equipment should a continued heavy overload occur. Our rugged transformers are especially built for our requirements, and insulated with the highest quality non-flammable insulating materials such as glass, mica and asbestos.



**Advanced design and protection features increase service life, make your maintenance simply a periodic operation of oiling the fan and blowing dust from the unit. Installation is completely engineered, no fumbling.**



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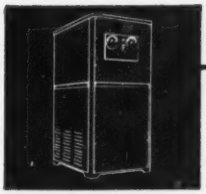
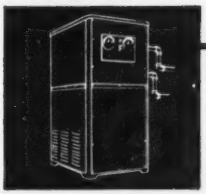


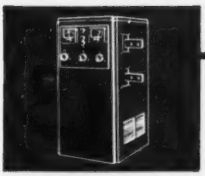
## LARGE PACKAGE UNIT

**Capacities from 2,000 to 50,000 amperes. Forced-air, fan-cooled type operates at all commonly used voltages. Requires only input and output connections for operation.**



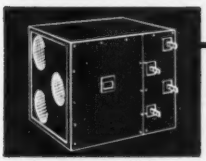
## WATER COOLED

**Capacities from 1,500 to 50,000 amperes. This unit consists of an air circulating system with a heat exchanger, uses your regular water supply (which can then be used for rinse tanks) as a heat removing medium. Functions well under very corrosive atmospheric conditions, or where extremely high ambient temperature is encountered.**



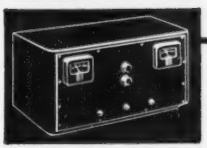
## SMALL PACKAGE UNIT

**Capacities from 250 to 2,000 amperes. Fan-cooled with exhaust from the top of the cabinet. Very compact to facilitate moving. Requires only three wires for input and output connections. Equipped with ammeter, voltmeter, shunt, starting equipment and regulation if required.**



## CUBICLE

**Capacity to 1,500 amperes. Designed for the building block type of operation, since the horizontal flow of cool air permits stacking. The addition or subtraction of total current output is easily accomplished.**



## BENCH TYPE

**Capacities from 5 to 200 amperes. Special design affords extreme flexibility of operation and meets exacting requirements of control, ripple and accuracy ideally suited to laboratory research and development work.**

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# Spotlighting FINISHING Progress

## Tin Immersion Coatings

By Dr. C. Fred Gurnham, Head, Dept. of Chemical Engineering, Michigan State College

TIN has been used for many years as a coating on articles made of other metals, in order to retard corrosion, to improve the appearance, or for various other purposes. The three principal techniques for forming tin coatings are hot dipping, electroplating, and the immersion or contact process. Some phases of the hot dip process were discussed in this column recently. The electroplating process is familiar to most platers and needs no further discussion at this time. We shall consider in this article the immersion and contact processes, which are less widespread because of their limitations, but which have almost universal application in some specific industries. The deposition of tin by immersion in water solutions has been discussed in several Technical Data Sheets issued or revised during 1953 by the Metal and Thermit Corporation; the present article is based principally on these notes.

The choice of method for producing tin coatings depends on a number of factors of which the most important are: the nature

A Monthly Digest of Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry

# The PROTECTION of ALUMINUM

Drawing courtesy of Piasecki Helicopter Corporation, Morton, Pennsylvania

THE H-21 Piasecki Tandem Helicopter—the "Work Horse"—is ideally suited for rescue work in areas inaccessible by other means, and in all kinds of rough weather. For durable paint adhesion and high corrosion-resistance aluminum parts of the "Work Horse" are Alodized. The "Alodine" protective coating chemical bonds paint, extends paint life, and protects unpainted aluminum. Because of its economy, effectiveness, and ease of application, the Alodizing process is finding wide-spread use in the aircraft field and in other industries fabricating products of aluminum. Alodized aluminum meets the requirements of Military Specification MIL-C-5541. Write or call for coating and process data on "Alodine".

"Alodine" Trade Mark Reg. U. S. Pat. Off.

CHEMICALS ACP PROCESSES

**AMERICAN CHEMICAL PAINT COMPANY**

*General Offices:*

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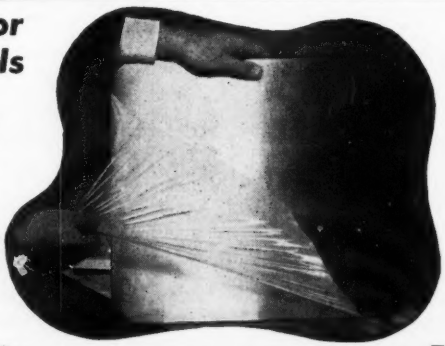
***Detroit, Mich.*** ***Niles, Calif.*** ***Windsor, Ont.***

of the basis metal, the coating thickness required, and the purpose and intended use of the coating. Where corrosion resistance is the important goal, as with tin plated steel used in the canning industry, a reasonably thick and non-porous deposit is needed. This is best achieved by hot dipping or electroplating. Where corrosive attack is less severe, or where the tin deposit is decorative only, the lighter immersion coatings are commonly employed. Familiar examples of immersion tin deposits are safety pins, common pins, buttons, thimbles, and other small household articles.

**Immersion and Contact Plating**

The contact or immersion process is truly electrolytic in nature, but differs from our usual concept of electrodeposition in that the current is generated by chemical means within the solution instead of by a rectifier or motor-generator set. An electrical potential is developed by connecting two unlike metals within an electrolyte; it is this potential or voltage which is the driving force for the deposition reaction. The electromotive force series of the chemists (Table I) is a listing of the elements in order of the voltage developed; if any metal in the table is brought into contact with a salt of a metal lower in the table, in water solution, a reaction tends to take place. In this reaction the free metal goes into solution as a salt, (or ion) and the nobler metal or metal lower in the series deposits out as a free metal. The order of listing in the table may vary with solution concentration, tempera-


***A Strippable Plastic for the Protection of Metals***



Striplastic is a protective plastic applied by spraying, dipping or rolling. It is used on stainless steels, high polished metal sheets, sheets in cold working or drawing, tools, dies and parts, and on sheets or metal parts before packaging. It protects against scratching and abrasion, and against rust. Also available as a booth coat protection.

**THE STRIPLASTIC COMPANY**
**10828 QUEBEC AVE.**
**CLEVELAND 6, OHIO**

Among many advantages, it is non-toxic, possesses great tensile strength and is easily stripped off in one piece. Write for complete information on this new strippable plastic.

# with UDYLITE equipment, sales grew and grew and grew—automatically

From this simple beginning...

## *The Remarkable Account of How a Basement Plating Shop Expanded to a Big Producer*

On Helen Avenue, in Detroit, stands an eloquent symbol of the remarkable improvements that take place in a plating plant when executive management makes the decision to *go automatic* . . . with Udylite.

Lee Silver Service, Inc. supplies precision plated parts to automotive and appliance companies, in quantities running into the millions. Production surpasses 80,000 precision plated parts daily . . . yet, consider . . .

This business, started only 15 years ago, was once a two-man operation in a basement . . . so small that their first month's plating supplies were carried into the shop in one hand by the Udylite delivery man.

But the men behind Lee Silver Service, Inc. were sold on the great potential for a company specializing in gold and silver plating . . . and they knew their future would ultimately include the finest in automatic plating machines. When, in 1947, they landed the biggest order for silver and gold plating ever sold—supplying silvered cabinets and gold fittings for the anniversary model of a famous automatic washing machine—they knew the days of hand-delivered supplies were a thing of the past.

During this development Udylite and Lee Silver worked hand in hand. Today this company is 100% Udylite automatic. Sales have soared. Production has zoomed. Rejects have been cut to .4 of 1%. Yes, progress and growth have come . . . *automatically!*

If *you* are in the plating business to stay, it's inevitable that you, too, will come to Udylite automatic equipment eventually . . why not look into it today . . . *now.*

. . . to this completely automatic plating plant—with Udylite equipment and technical guidance *all the way!*

ture, complexing reagents, and other factors, but the concept is a useful one in many reactions.

In a familiar experiment, an iron or galvanized pail placed in a solution of copper sulfate rapidly becomes coated with metallic copper, while the iron or zinc goes into solution as the sulfate salt. Using the abbreviated electromotive force series of Table I, it will be noted that tin would be deposited as metallic tin from solutions of its salts by contact with aluminum, zinc, or iron. The chemical reaction for the displacement of tin by zinc is as follows:

$$SnCl_2 + Zn \rightarrow ZnCl_2 + Sn, \text{ or}$$
$$Sn^{++} + Zn \rightarrow Zn^{++} + Sn$$

From the electromotive series of Table I, it would not be expected that tin would be displaced from solution by copper since copper is a more "noble" metal. By the addition of certain complexing reagents to the solution, however, the ionization of copper can be repressed and it becomes possible to apply immersion deposits of tin on copper and copper alloys.

**Table I**

SIMPLIFIED ELECTROMOTIVE SERIES OF METALS.

Aluminum
Zinc
Iron
Tin
Hydrogen
Copper
Silver
Gold

Most immersion deposits are not adherent and are of little or no commercial value. Tin is an exception in that it can be made to form adherent and permanent coatings on many metals. Immersion deposits of other elements may be adherent under certain rigidly controlled conditions, whereas the tin deposits are satisfactory over a wide range of variables. The speed of immersion deposition is different for each metal system; for any particular system such as tin deposition on iron, the speed can be controlled reasonably well by varying the temperature. Deposits produced slowly are generally more adherent and dense than rapidly deposited coatings and this quality requirement must be balanced against the desire for rapid production.

In immersion tinning, the metal object which is to be coated is sim-

**Slightly Used BUFFS**

Air-Cooled Loose and Sewed
Any Quantity — Any Size

**New Polishing Wheels**
**Grain**
**Glue**
**Abrasive Belts**
**Compounds**

*Write today for details.*

**MICHIGAN BUFF CO., INC.**
**3503 Gaylord Ave., Detroit 12, Mich.**

## develops a new approach to SURFACE FINISHING

ROTO-FINISH has now extended the original barrel finishing process to include entirely new special fixtures machines and equipment. These machines represent a radically new departure from the generally accepted conception of barrel finishing machines, made possible only by Roto-Finish extensive experimental facilities and long experience with modern, precision surface finishing processes. And these new special fixture machines prove that there are no limits to the size or shape of parts which can be successfully processed with proper equipment, materials and methods.

The new engineering developments which have taken place in the Roto-Finish laboratories open the door wide to entirely new applications and entirely new principles in mechanical surface finishing. Therefore, whatever your finishing problem, we urge you to ship us two finished and several unfinished samples of parts you may wish to have us process in our laboratories. Remember, Roto-Finish guarantees the same result in your shop, as on the samples processed in their laboratories.

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It's the finish that counts

ply dipped into the solution of tin salt. Proper control of tin concentration, temperature, pH, and other variables is desirable, but the immersion deposition will occur under a wide range of these conditions. The deposit results from the reaction of the surface layer of iron or other basis metal with the tin ions in solution, resulting in the dissolving of a small amount of iron and the deposition of tin metal. As soon as the tin layer covers the basis metal the reaction necessarily ceases. The result is a very thin and uniform coating. Metals other than tin, which do not produce adherent deposits, fail to protect the basis metal from continuing reaction. Under such conditions the end product is a sludge of deposited metal and either complete dissolving of the metal article or practically complete depletion of the depositing ion from the solution.

Contact plating is similar to immersion plating with the added technique of maintaining a piece of metallic tin, zinc, or aluminum in contact with the part being coated. This bimetallic contact sets up an electrical potential which aids in the deposition of tin. If the contact metal is tin it behaves much as a soluble anode in ordinary electroplating, furnishing tin ions to the solution to replace those deposited in the coating. Use of a contact metal


3 QUICK FACTS

Tell How You Can

**Finish Any Metal BETTER for LESS**

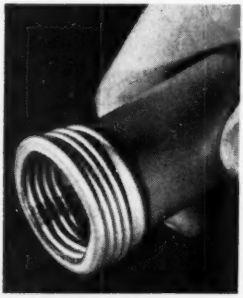
If you want to do a better job of metal-finishing, and *save money doing it*, VINSYNITE can help you. Here's how:

**1. Vinsynite** is applied simply, by brush, spray or dip. It involves only one step, requires no chemical control, no heating, no special equipment.

**2. Vinsynite** is versatile. It performs successfully on any metal. Even if your product is made from several different metals, it can be painted *after* parts are assembled.

**3. Vinsynite** outperforms other coatings in adherence and corrosion-resistance. Forms a perfect base for any types of top coats.

Regardless of what you finish, Vinsynite can help you finish it *better* for *less*. Send for free booklet and specific test data.



Test specimen of steel tubing. Under severe distortion both Vinsynite and Vinyl top coat are unaffected.

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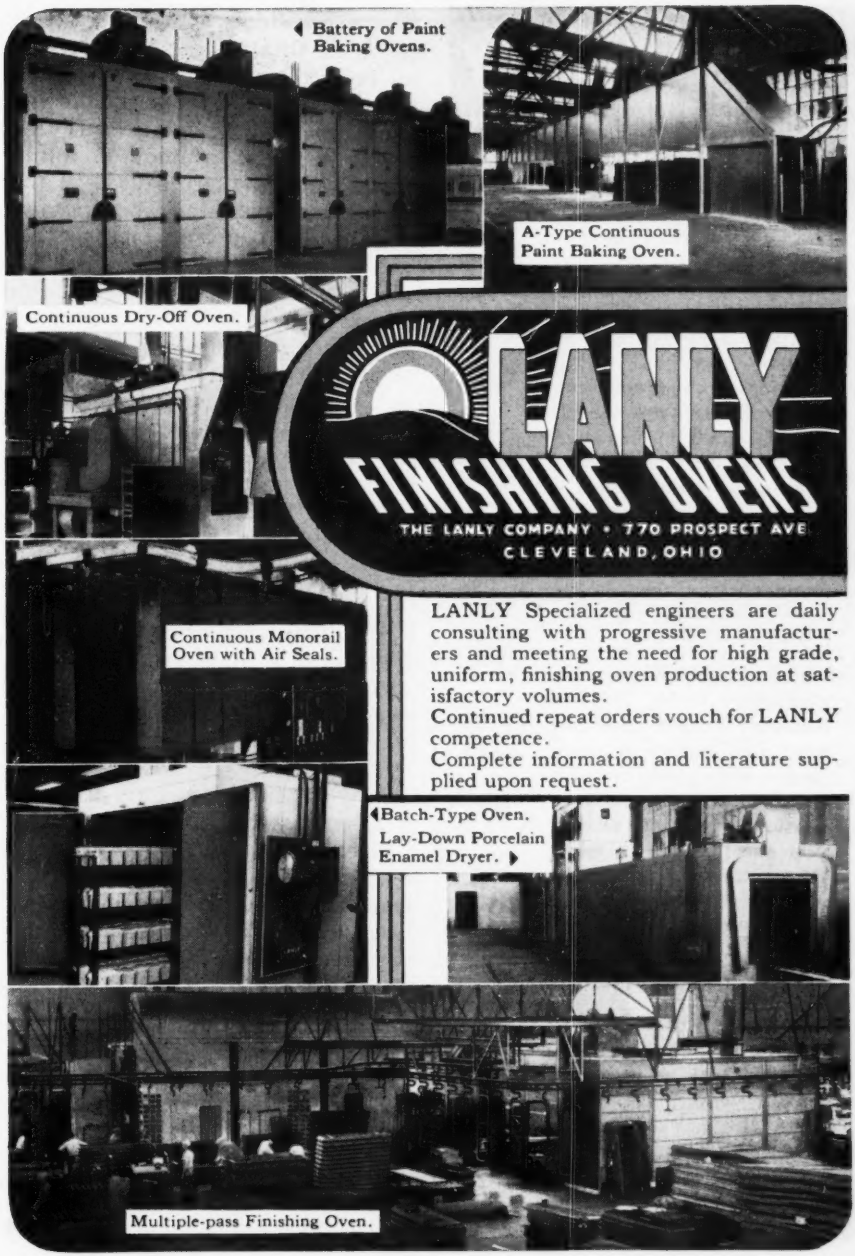
**Vinsynite**

COMBINES PROTECTION AND ECONOMY


Battery of Paint Baking Ovens.
A-Type Continuous Paint Baking Oven.
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Continuous Monorail Oven with Air Seals.
LANLY Specialized engineers are daily consulting with progressive manufacturers and meeting the need for high grade, uniform, finishing oven production at satisfactory volumes.
Continued repeat orders vouch for LANLY competence.
Complete information and literature supplied upon request.
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CHANGE TO NESTIER®
AND PUT ALL YOUR PARTS IN ONE BASKET

Forget rehandling costs—replace your present containers with NesTier expanded metal baskets—and watch your production flow become smoother, faster, and far more economical. NesTier baskets are specifically designed for all operations involving dipping and degreasing small parts—and serve as "tote-boxes" as well. Parts move immediately, in same container, from one operation to the next, on any type conveyor, pallet, or by hand.

**We GUARANTEE that replacement with NesTier baskets—regardless of how you transport small parts—will bring you a substantial saving in production costs, a saving you can't afford to miss. Two standard sizes in various sizes of mesh and perforated metal.**

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NESTIER®

THE CHAS. WM. DOEPKE MFG. CO., INC.
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provides a high enough electrical potential that tin can be deposited on copper and other noble metals without the need for a complexing agent. In most commercial installations, however, cyanide or other complexing agents are used in the immersion tinning of copper alloys.

Immersion and contact plating have limited utility, but in specialized applications they have the following advantages over electroplating or hot dipping; simplicity of operation, with considerably less skill required than the other processes; economy, especially in capital expenditures for electrical and other equipment; uniformity of deposit and very thin coatings; practically unlimited throwing power into deep recesses.

### Contact Plating Solutions

Solutions used for contact plating frequently include no tin ions in their original makeup, but make use of a contact plate as a source of tin metal. A very simple system to achieve this purpose includes only a solution of tartaric acid and a tin contact sheet. This solution, at a strength of about 2 oz./gal., and operating at a boil, provides a satisfactory tin deposit on copper or brass articles in about 2 hours immersion. A similar contact plating solution reported by Blum and Hogaboom contains 0.2 oz./gal. of potassium acid tartrate (cream of tartar) and 0.4 oz./gal. of common salt. This bath is operated at a temperature of 200 deg. F. or higher and requires from 3 to 5 hours for full development of the deposit. The use of aluminum wire as contact metal, and simultaneous contact plating and electroplating has been

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TAKE A MODERN PLANT - MODERN FACILITIES - SERVICE - QUALITY AND "KNOW HOW" ...AND YOU HAVE ..

# BUCKINGHAM

## BUFFING and POLISHING COMPOSITIONS

- Stainless Steel Composition
- White Finish
- Tripoli
- Chrome Coloring Composition
- Greaseless Composition
- Emery Cake
- Brass Coloring
- Emery Paste
- Burring Compound
- Grease Stick
- Spray Pastes Stainless Steel Tripoli

*Representation in Major Cities* *Write Dep't. C for Samples*

**The BUCKINGHAM PRODUCTS Co.**

**14100 FULLERTON AVE. • DETROIT 27, MICH.**

described in a recent article by J. K. Wilson and O. Wright.

Immersion baths containing tin are commonly made up from stannous chloride, either as the anhydrous form ($SnCl_2$)* or as "tin salt" ($SnCl_2 \cdot 2H_2O$), at about 4 oz./gal., and caustic soda (NaOH), about 8 oz./gal. In solution, these chemicals react to form sodium stannite ($Na_2SnO_2$), which is the active ingredient of the bath. Considerable free caustic remains after the formation of stannite is complete. At temperatures near the boiling point, this solution will plate brass parts in an hour or less, either with or without a contact plate. Because tin chemicals are used in the preparation of these baths, the solutions are too valuable to be discarded after each use, as is the custom in the tartrate and similar baths which contain no tin in their original makeup. Various other immersion and contact baths have been used and a rather wide range of compositions is possible. Blum and Hogaboom have reported the use of a stannous chloride and cream of tartar mixture and of stannous chloride with sodium sulfate.

For tin plating on copper and brass basis metals by the immersion process, the Metal and Thermit Corporation recommends a solution containing 8 oz./gal. of potassium stannate ($K_2Sn[OH]_6$), 16 oz./gal. of potassium cyanide (KCN) and 1 oz./gal. of potassium hydroxide (KOH). Sodium compounds can

* Available as "Stannochlor,"® Metal & Thermit Corp.


## Speed Up Your Finishing Operations with CENTRAL POLISHING MACHINES

Hydraulically operated. Anyone can operate. Extremely versatile. Handle long lengths, extrusions, sheets and many odd-shaped pieces. Polish extrusions and sheets their ENTIRE LENGTH. Polishing stroke quickly adjustable 2 inches to full capacity. Our patented Hydraulic Contour Device permits the finishing of a wide variety of shapes and contours.

- Polishes extrusions and sheets complete, end to end.
- Simple operation. Women run them.
- Adjustable stroke 2" to full capacity. Machines, 7 to 21 foot stroke.

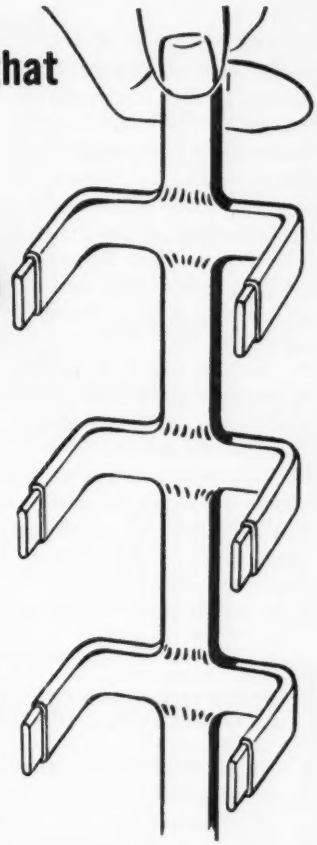
*FULL INFORMATION ON REQUEST.*

**H-M 84 HORIZONTAL MACHINE**
(Guards removed to show detail) 7 to 21 foot stroke. Table, 30" or 40" wide. Table oscillates at turn of valve.

**CENTRAL MACHINE WORKS**
72 COMMERCIAL ST. • WORCESTER, MASS.

## Be sure of rack protection that

# STICKS TIGHT



## through all cycles

## ...use COATING 218X

USERS of Unichrome Coating 218X know that in Unichrome Primer 219PX they're getting the outstanding *single coat primer* developed. It not only saves time and work, but also assures maximum benefits from the remarkable properties of Coating 218X.

Anchored to this primer, Coating 218X takes hard use – even abuse. It defies all plating and cleaning cycles without blistering, or lifting at contacts. It won't crack, chip or tear. It even resists vapor degreasing cycles.

Remember, Coating 218X is produced by United Chromium . . . the company that has: (1) Developed plating processes; (2) Given service on plating problems; (3) Pioneered highly corrosion-resistant plastisol coatings . . . and therefore knows what a rack coating needs for maximum plating service.

UNICHROME Trade Mark **COATINGS for METALS**

**Products of UNITED CHROMIUM, INCORPORATED**

100 East 42nd St., New York 17, N.Y. • Detroit 20, Mich. • Waterbury 20, Conn. • Chicago 4, Ill.
Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto 1, Ont.

be used in place of potassium and are cheaper but generally less satisfactory. The composition stated is not critical but optimum results are obtained by consistent operation. The cyanide is present as a complexing agent which makes the copper less "noble" and capable of displacing tin from solution. The potassium hydroxide serves to stabilize the bath and should be maintained at the value stated or higher. Lower concentrations of stannate and cyanide result in slower reaction and hence these should be checked whenever the rate of deposition is retarded. This bath is operated at temperatures between 70 and 150 deg. F., preferably in the upper part of this range. The time required varies from 2 to 20 minutes, being more rapid at the high temperature. A major advantage of this process is the better stability of stannate as compared with stannite, resulting in decreased loss of tin metal by sludging. The process is more rapid than other immersion methods.


**FUNCTIONAL FINISHES!!**

If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity —

*Try Us!*

We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

**The Varnish Products Co.**

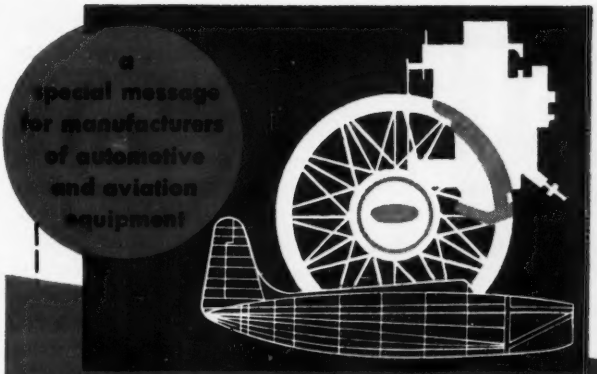
**5204 Harvard Avenue**
**Cleveland, Ohio**


### Tin Deposits on Aluminum

Although commercial tin immersion deposits on pure aluminum have not yet been developed, such deposits have been used for many years on aluminum alloy pistons for automotive and airplane engines. The tin deposit improves corrosion resistance and reduces the tendency for sticking or seizing. Immersion deposition of tin on aluminum takes place readily since aluminum is so far above tin in the electromotive series. Sodium stannate has been used in most plants as the active ingredient of the solution, but it is gradually being replaced by potassium stannate for a number of reasons. Because the potassium stannate provides a more active bath than the sodium salt, good deposits are obtained on difficult jobs such as pistons which are not thoroughly cleaned or pistons which are being rerun after grinding or stripping of rejects. The potassium salt is more expensive than the sodium in first cost, but is frequently more economical in the long run. Sodium solutions have a greater tendency to form sludges of hydrated tin oxide, which represent a loss of tin from the solution in a non-recoverable form.

The recommended solution strength is from 6 to 9.5 oz./gal. of either potassium or sodium stannate, plus not more than 1.25 oz./

a special message for manufacturers of automotive and aviation equipment



need a finish for low cost corrosion protection or showroom sparkle? *specify*

# IRIDITE

Here's a finish for non-ferrous parts that gives high corrosion protection, a firm and lasting base for paint or showroom sparkle . . . yet at low material and production costs. And, you can easily "Touch-up" scratches, repairs, welds, etc. on light metal parts! Here's Iridite . . . and here's how you can use it:

**ON ZINC AND CADMIUM** you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

**ON COPPER . . .** Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

**ON ALUMINUM** Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

**ON MAGNESIUM** Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

**AND IRIDITE IS EASY TO APPLY.** Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

**WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.**

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD.

Iridite is approved under government specifications

Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals; ARP Plating Chemicals.

# BRIGHT GOLD

**BY AUROMET**

Auromet Bright Gold Plating Solution speedily produces a hard, uniform deposit of natural Bright Gold. Operating conditions are not critical or sensitive. The bath is made from conventional chemicals using ordinary plating equipment and standard controls.

*Auromet Bright Gold Plating Solution produces a 24 Karat color at 100% cathode efficiency.

*Auromet Bright Gold Plating Solution operates at room temperature.

*Auromet Bright Gold Plating Solution eliminates polishing, buffing and scratch brushing regardless of thickness of deposit, and has been thoroughly proven by the jewelry electronic and miscellaneous industries.

*Auromet Bright Gold Plating Solution can be used in either still or barrel plating operations. Send for Auromet's technical folder giving data on Bright Gold and other precious metal plating salts and solutions.

**AUROMET**
**CORPORATION**
**199 CANAL ST., NEW YORK 13, N. Y.**


gal. of free potassium or sodium hydroxide. The operating cycle includes a thorough cleaning of the aluminum alloy, followed by a water rinse at room temperature, a 20 per cent nitric acid dip from 7 to 20 seconds, and cold water rinse. Immersion in the tin solution is followed by cold and warm water rinses. Holding in the tin solution for 3 to 4 minutes, at a temperature of 120 deg. F., produces a tin coating from 0.0001 to 0.0002 inches in thickness, with a bright metallic lustre. The temperature should be increased gradually from 120 to 190 deg. F. as the solution is used and as its tin content is depleted. When satisfactory deposits can no longer be obtained even at the highest temperature, it is an indication that the tin content of the bath is low and the free alkali high. Generally it is more economical to discard the bath at this point than to analyze and salvage it.

The free alkali content of the solution increases with use, but should not be permitted to exceed 1.25 oz./gal. Some free alkalinity is desirable for bath stability but an excessive concentration causes dark coating of poor quality. Excessive alkali can be neutralized with acetic acid, diluted with water before addition to the bath. Acid additions should be made slowly and with constant stirring to avoid precipitation of tin sludge, since this sludge cannot readily be redissolved and hence is a loss of tin metal.

It is desirable to use adjustable automatic temperature control of the tin immersion plating solution. Bath operation should be started at

***NOW... get new, reinforced***

# NU-TEX

**DEPRESSED CENTER**

## DISK WHEELS

**FOR FASTER, SMOOTHER CUTTING,** roughing and grinding. Special, built-in resiliency provides smooth, cushioned cutting action . . . reduces bouncing . . . holds wheel in close contact with work. Cushioned action distributes pressure evenly . . . makes every inch of surface travel an inch of productive cutting . . . speeds up work with either portable or bench-type grinders.

**FOR LONGER LIFE . . . LOWER COSTS.** Bonded together with an extremely tough resin for added durability. Textile reinforcement provides maximum on-the-job safety . . . extra protection against breakage . . . longer life under continuous operation.

**FOR A WIDE SELECTION . . . PROMPT SERVICE.** Nu-Tex Depressed Center and Straight Disk Wheels are now available in popular diameters and thicknesses for all types of finishing. Grades range from 0 (hard) to 6 (soft). Write now for descriptive literature. Or, if you prefer, have an Atlantic Abrasive Engineer show you Nu-Tex Disk Wheels in action — saving time and money *on the job!*

## ATLANTIC ABRASIVE CORP.

**South Braintree 85, Massachusetts**

MAIL THIS COUPON TODAY

Atlantic Abrasive Corp.
524 Pearl Street
South Braintree 85, Mass.

☐ Please send me descriptive literature.
☐ Please have an Atlantic Abrasive Engineer call.

**Name** .....

**Company** .....

**Street** .....

**City** ..... **State** .....

When the call is for a
PRIMER-SURFACER
that's Production-Proved
CALL FOR
L3714
SEA-LAC
L3714
Bakes hard in a half hour at 275° F. Air dries to wet sand in 4 to 6 hours. Takes top coat of lacquer after 10 minutes air-dry. Shows very little absorption of top coat. Good for wood, masonite, steel, treated aluminum. Send for samples.
Duralac Chemical Corp.
84 LISTER AVE., NEWARK 5, N. J.

120 deg. F. and raised in 5 deg. increments whenever the coating becomes too thin or the process is too slow. Plating speed and thickness improve at higher temperatures, thus overcoming the adverse effect of tin depletion. Too high a temperature, however, will result in blister formation.

### Tin Coatings on Steel Wire

Heavy deposits of tin on steel wire can be prepared by the hot dip method or by electrodeposition. For many applications, a light deposit is adequate and more economical. In the wire industry, such coatings produced by immersion deposition are referred to as "liquor finish."

The liquor finish process provides improved drawing qualities for the steel wire as well as improving the appearance of the finished product and increasing the corrosion resistance. In tire bead wire, the tin coating protects the steel from corrosive attack by the rubber compound and also promotes bonding between the rubber and the wire. The coating is not pure tin but is a tin-copper alloy which can be varied in composition to give a copper color, or a white color, or any intermediate shade. The solution used contains copper sulfate, stannous sulfate, and free sulfuric acid. It is possible to prepare this solution from copper sulfate and sulfuric acid by treatment with metallic tin, however the modern tendency is to use stannous sulfate, which is commercially available and easy to control in use.

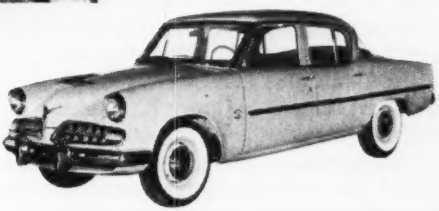
Stock solutions of stannous sulfate can be prepared by dissolving 100 pounds of $SnSO_4$ in a mixture of 90 gallons of cold water and 5

STUDEBAKER

# PAINTS BODIES WITH RANSBURG

## *Electro-Spray*

Automatic electrostatic spray enables Studebaker to apply a heavier and more uniform primer surfacer while giving them a net saving of 1.81 per body in paint and direct labor. Not only is the Ransburg method providing the desirable increase in uniform film thickness, but it is enabling Studebaker to paint more bodies per hour with the substantial savings in paint and labor over the former hand spray method.



The heavier, and enduring, first coat on Studebakers provides the necessary base for the superior finish . . . a finish which resists all kinds of exposure conditions, such as combinations of warm and humid climate, and prolonged bright sun exposure.

Whatever your product may be—large or small—if your production volume justifies conveyorized painting, chances are that one of the RANSBURG electrostatic processes can do the job better, and for less. Write or call for data and detailed information on numerous and varied installations.

*Ransburg* ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

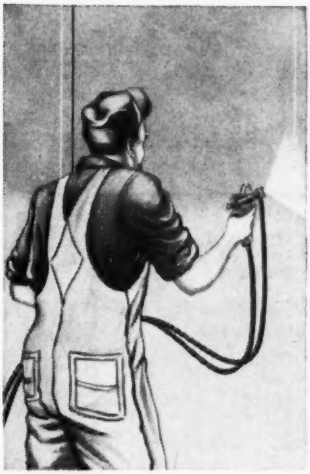
gallons of 66 deg. Bé sulfuric acid. This solution contains approximately 1 lb./gal. of stannous sulfate. The copper sulfate stock solution is prepared by dissolving 150 pounds of bluestone ($CuSO_4 \cdot 5H_2O$) in 90 gallons of hot water. This solution contains approximately 1½ lb./gal. of hydrated copper sulfate.

For a white liquor finish on steel wire, the coating solution contains no copper sulfate, but is composed of 0.1 to 0.3 oz./gal. of stannous sulfate and 0.5 to 1.5 per cent free sulfuric acid. This solution gives a satisfactory finish in from 3 to 20 minutes at temperatures above 180 deg. F. Because the tin content of the bath is so low, it must be maintained by frequent additions of stock solution. If the bath will not operate satisfactorily for any reason other than low tin content, it is recommended that the solution be discarded. This is not a major loss because the tin content is so small.

For a straw colored liquor finish the solution is composed of a mixture of stannous and copper sulfates with free sulfuric acid. The proportion of tin to copper may be varied depending on the color desired and the weight of deposit needed. Increased proportions of tin result in better adhesion of the coating to the wire and also lessen the danger of too heavy a deposit. Recommended solution compositions range from 0.25 to 0.75 oz./gal. of stannous sulfate and 0.1 to 0.3 oz./gal. of copper sulfate, with from 1 to 3 per cent free sulfuric acid. These baths can be operated at room temperature, producing a satisfactory deposit in 3 to 5 minutes. The more rapid rate of deposition as compared with pure tin white finishes is due to copper — far more electropositive than tin with respect to iron.

There is, of course, a gradual buildup of iron in the solution due to the chemical reaction. Concentrations of iron up to 7 oz./gal. are safe, and dragout is usually sufficient to prevent any higher concentrations from developing. Sludge and other foreign matter, however, may accumulate in the tank and require occasional dumping of the solution. In the dumping process, it is frequently possible to decant and save from 1/3 to 1/2 of the solution, discarding only the heavier sludge in the bottom.

Tin immersion deposits cannot replace hot dip or electroplated deposits where heavy coatings are required or where speed of deposition is essential; however, in many special fields they have a distinct application because of their specific advantages. The equipment and solutions required are extremely simple, hence job platers may find it desirable to utilize immersion techniques on special work since the solutions can be discarded at the end of the run and the tanks cleaned up for other uses.



*off again - on again - clean again with*

# "LIQUID ENVELOPE"
## STRIPPABLE BOOTH COATING

Spray "Liquid Envelope" on a clean booth. When over-spray accumulates, break coating and peel off in great big sheets. Re-spray—and you have a clean booth in minutes. That's the low cost way to keep spray booths firesafe, lighter, better ventilated, too.

***NEW USERS:*** Order a 5 gallon Test-Sample at the drum-lot price. That's the way hundreds of smart operators learned how to save time and money on booth cleaning.

**BETTER FINISHES & COATINGS, INC.**

268 DOREMUS AVENUE, NEWARK 5, NEW JERSEY
122 EAST 7th STREET, LOS ANGELES 14, CALIF.

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Aviation Lubricants Co., Inc., San Diego, Calif.
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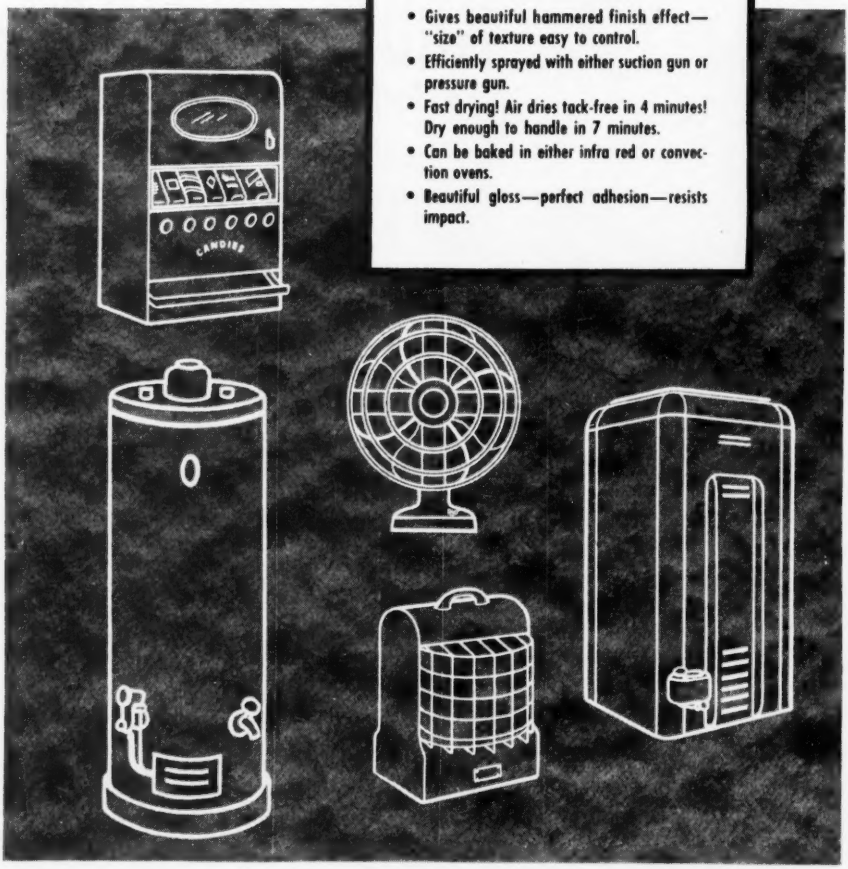
# *Lowetex* -- New Lowe Brothers 3 Operations, Increases

**Here's the "lowdown" on Lowetex!**

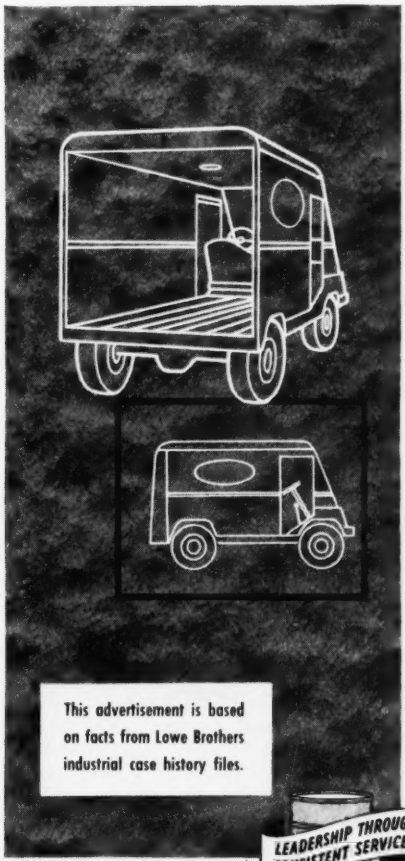
- Gives beautiful hammered finish effect—"size" of texture easy to control.
- Efficiently sprayed with either suction gun or pressure gun.
- Fast drying! Air dries tack-free in 4 minutes! Dry enough to handle in 7 minutes.
- Can be baked in either infra red or convection ovens.
- Beautiful gloss—perfect adhesion—resists impact.




✻ New fast-drying *Lowetex* is ideal for any surface where a good looking, long-wearing hammered finish is desired. Coin machines, cigarette machines, heaters, furnaces, bases for fans—these are just a few typical examples. Perhaps *Lowetex* will lower *your* finishing costs. Write today.

# "Hammered" Finish--Eliminates Manufacturer's Production!

## Oven time savings-50%
## Labor savings - - - 40%



This advertisement is based on facts from Lowe Brothers industrial case history files.

In applying a hammered finish to truck interiors, a manufacturer found it necessary to *bake* the finish before masking it for the *exterior* finishing job. Thus, two complete baking cycles were required. A Lowe Brothers "Finishing Specialist" recommended *Lowetex*®—sensational new fast drying hammered finish. After only 15 minutes of *air drying*, *Lowetex* was ready for interior metal masking—making it possible to spray *exterior* surfaces promptly and bake *both* interior and exterior finishes in *one* trip to the oven! Two costly handling operations and an entire baking cycle were eliminated. Oven time saved—50%! Labor saved—40%! Moreover, production potential was greatly increased by faster flow of units through the finishing process!

Whatever *your* product or finishing problem, let a Lowe Brothers "Finishing Specialist" give you the benefit of his knowledge and experience. There's no obligation—and many manufacturers will tell you it pays big dividends. Write today!

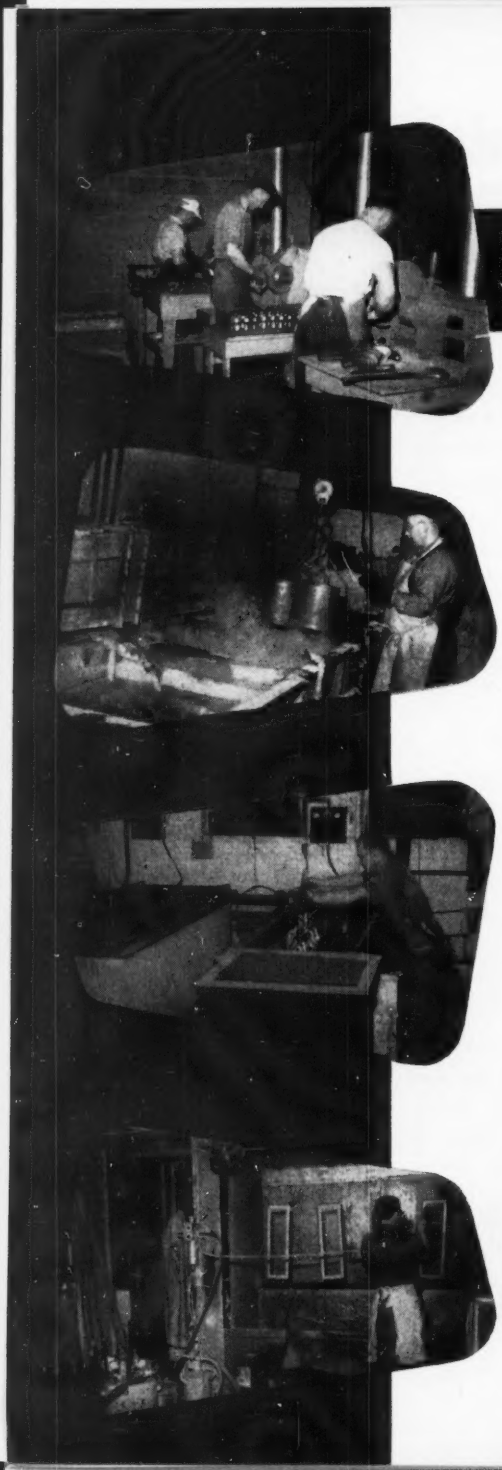
**THE LOWE BROTHERS COMPANY • Dayton, Ohio**
**Industrial Division**

**District Offices: Atlanta, Boston, Chicago, Jersey City, Kansas City**

LEADERSHIP THROUGH CONSISTENT SERVICE

**Lowe Brothers**
**FINISHES FOR INDUSTRY**

***since 1870***



## Inhibited Acid Cleaner

The Magnus Chemical Company, 208 South Ave., Garwood, N. J., has developed an inhibited acid cleaner, D-Scale-RW, for the removal of rust and scale in metal-working operations. It is harmless to all metals. It is a stable, inhibited acid compound in the form of a white powder, which is chemically inert until dissolved in water. Solutions of Magnus D-Scale-RW are, however, powerful acid cleaners.

For cleaning molds, a solution is made up at a concentration of one pound of D-Scale-RW per gallon of water, which is heated to 150 deg. F. Molds are soaked in this solution for only 5-10 minutes to do the cleaning job that requires two hours with mineral acids. Moreover, a water pressure rinse leaves the molds perfectly clean without any need for hand brushing.

For information circle No. 1 on Reader Service Card inside back cover.

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## Electropolishing Concentrate

Electro-Glo Company, 1432 S. Talman Ave., Chicago, has introduced an electropolishing concentrate known as "Electro-Glo 200," which operates at room temperatures. The process is designed to level the surface, remove high spots and burrs, and produce finishes from satin to mirror-bright on copper and copper alloys.

The new process will polish intricate shapes impossible by other known methods, remove burrs from threaded,

pierced and stamped parts, increase corrosion resistance, and produce superior adhesion of plating. It provides a method of machining metal parts electrochemically, to tolerances of one ten-thousandth of an inch.

Advantages of the new concentrate are that it operates at room temperatures from 75 to 125 deg. F., uses standard plating tanks and equipment, does not etch, is excellent in its throwing power, is non-toxic, non-flammable, non-explosive, and stable.

Basically, in the Electro-Glo process, metal is removed rather than deposited as in electroplating. The "Electro-Glo 200" concentrate in the finishing solution controls the metal removed, taking the highest surface projections first. In from 2 to 8 minutes at an operating rate of 5-12 volts and 0.5-1.5 amp./sq. in. an "Electro-Glo 200" and phosphoric acid solution will produce finishes from satin to mirror-bright on all copper or copper alloy surfaces, except leaded brass and silicon bronze, which will not take mirror finishes.

For information circle No. 2 on Reader Service Card inside back cover.

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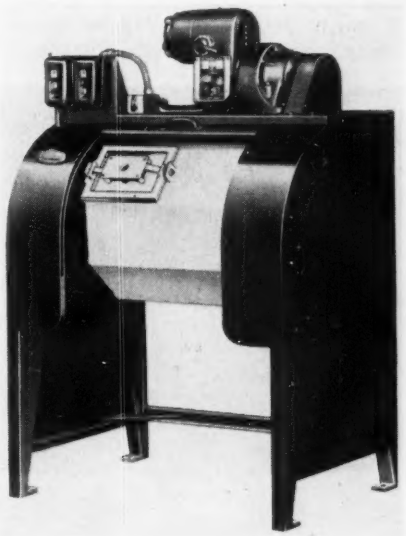
## Barrel Finishing Machine

Almco Supersheen has introduced an improved Model OB-50 Barrel Finishing Machine.

This compact model has been designed to include all the features of larger Almco Supersheen models, but with an entirely new capacity for intermediate size runs, thus saving capacity of larger units for full batches.

All barrel finishing operations can be performed in this machine, including grinding, deburring, descaling, polishing and cleaning.

Single barrel is 22 inches in diameter by 24 inches long, single or double compartment as desired. Outstanding features include: variable speeds of 10 to 30 RPM; all welded heavy gauge steel construction; removable waterfall front design; octagonal shape drum



Almco Supersheen Model DB-50

with quick-operating camlock door; conveniently located electrical controls, start-stop switch plus forward and reverse and protective overload heater controls.

Complete information can be secured from Almco Supersheen, Queen Stove Works, Inc., Albert Lea, Minn., or by circling No. 3 on Reader Service Card inside back cover.

## Versatile Polishing Head

The Murray-Way Corporation, Birmingham, Michigan, manufacturer of automatic polishing, buffing, grinding and filtering equipment, has announced a heavy-duty, multi-positioning buffing head with many unusual features.

The head, known as the #55, can be positioned for any job by means of simple, conveniently located adjustment controls on the front of the head. It can be rotated in a full 360 degree swing on both axes, simultaneously; and automatic positioning provides constant, full contact on even the most irregularly shaped piece. An adjustable float restrictor controls the degree of rise and drop of the wheel.

Pneumatic controls for wheel lift-off are available for fully automatic installations. The fine centering of wheel over work is quickly accomplished by means of additional positioning ways on the head mounting bracket.

The #55 head may be used for either right or left hand operation by simply inserting the fulcrum retainer housing. Improved frictionless spindle bearings assure long, trouble-free service and require no grease or oiling.

The patented, Murray-Way, adjustable fulcrum makes the #55 head an all-position, full-contact polishing and buffing head, operating on any plane —on any angle, even though compounded. This flexibility can mean fewer heads required to finish irregularly shaped work pieces.

For information circle No. 4 on Reader Service Card inside back cover.

Polishing and Buffing Head

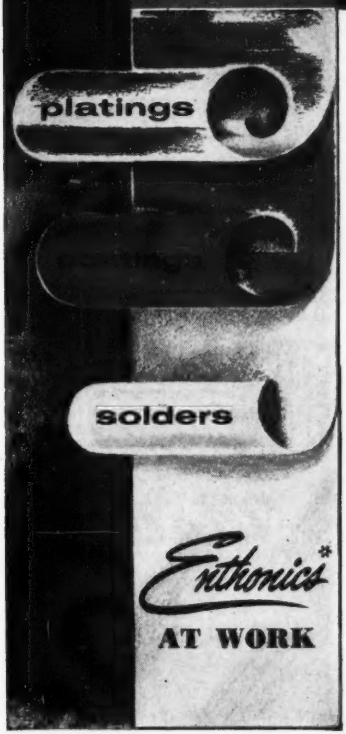
## Parts Cleaning Machine

Turbo-Blast Parts Cleaning Machines which effectively combine the three basic factors in cleaning science . . . physical force, chemical detergency and heat . . . have been announced by Storm-Vulcan, Inc., of Dallas, Texas.

Models range in sizes from 20-gallon solution capacity to 2300-gallon capacity for applications in cleaning, degreasing and stripping. All models are equipped with impellers which create a violent, fast-cleaning scrubbing action. These machines thoroughly clean everything from engine blocks to nuts, bolts and small parts, remov-

# metal strippers

STRIP ... quickly safely economically




## ENTHONE METAL STRIPPING GUIDE

| *BASE METAL* | *TO BE CHEMICALLY STRIPPED* | *METAL STRIPPER PRESCRIBED* |
|---|---|---|
| STEEL | NICKEL • COPPER • SILVER • ZINC • CADMIUM | **ENSTRIP "S"** — additive for sodium cyanide solutions. **ENSTRIP "A"** — prepared compound containing sodium cyanide. **ENSTRIP "103"** — alkaline electrolytic stripper without cyanide. |
| COPPER • STEEL | TIN-LEAD COATINGS | **ENSTRIP "TL"** — speedy alkaline stripper. |
| ALUMINUM • COPPER • STEEL | HEAVY CHROMIUM COATINGS | **ENSTRIP "CR-5"** — rapid acid-type stripper. |
| COPPER ALLOYS | NICKEL • TIN ZINC • LEAD CADMIUM | **ENSTRIP "165-S"** — additive for acid solutions. |
| ZINC DIE CASTINGS | CHROMIUM • NICKEL • COPPER | **ENSTRIP "L-88"** — acid electrolytic stripper. |
| STEEL PLATING RACKS • DEFECTIVE WORK | ZINC • CHROMATE COATINGS | **ENSTRIP "Z"** — alkaline chemical stripper. |

*Additional information on ENSTRIPS may be obtained without cost or obligation by writing —*

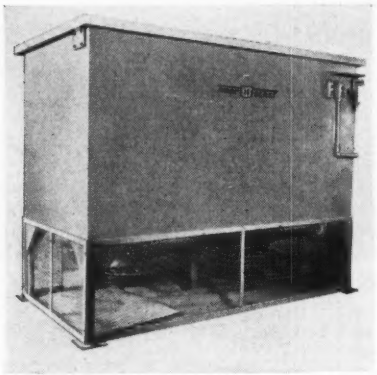
ENTHONE INCORPORATED

**442 Elm Street, New Haven, Connecticut**

REPRESENTATIVES AND STOCK POINTS

**Chicago, Ill. — Rocky River, Ohio — Los Angeles, Calif.**

**The Scientific Solution of Metal Finishing Problems*



Turbo-Blast Parts Cleaning Machine

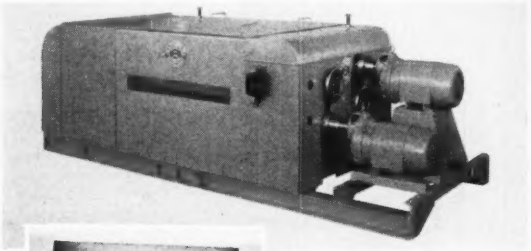
ing all types of greases, oils and drawing compounds. No recessed areas are left uncleaned.

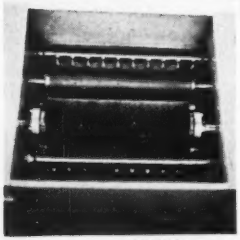
Some models are equipped with baffle plate covers which permit powerful agitation with two-layer stratified cleaning materials heretofore used only in soak tanks or with mild agitation. Turbo-Blast units are heated by steam, fuel oil, natural gas or manufactured gas, thermostatically controlled for effective and economical use. Special Turbo-Blast cleaning systems can be devised, such as conveyorized systems, with varying patterns and fluid application.

Catalog and application data available from the manufacturer, Storm-Vulcan, Inc., 2225 Burbank, Dallas, Texas, or circle No. 5 on Reader Service Card inside back cover.

### Deburring Media

The Frederick Gumm Chemical Co., Inc., 538 Forest St., Kearney, N. J.,



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for
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- Removes scale, burrs, scum, dirt
- Polishes or puts special finish on metal

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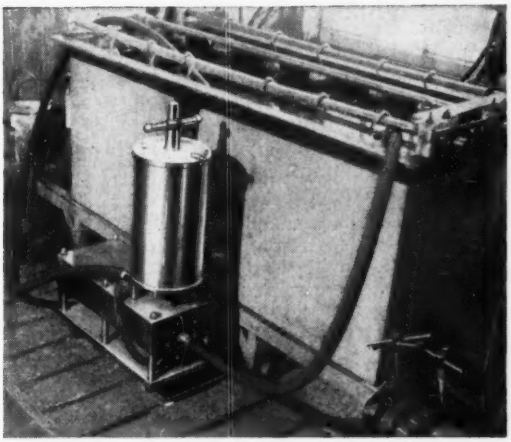
# Here's how to cut your losses

## get better finished plated work — save time and labor



The *"Sealed-Disc"* Filter will remove all dirt, dust, and sludge from your plating solutions. You will no longer worry about pitting, spotting, poor adhesion, formation of nodules, etc.

**More and more platers testify to the remarkable savings in operating time and labor that the *"Sealed-Disc"* Filter gives them. These cost-minded platers get better finished plated work and have found that their solutions last l o n g e r. *"Sealed-Disc"* Filters, designed to meet plating room requirements, are smaller, more compact and portable, than ordinary conventional filters.**

**Regardless of the size or type of your installation, there's a *"Sealed-Disc"* Filter to "fit your job". You can depend on a *"Sealed-Disc"* Filter for positive, trouble-free performance that's proof against even the invisible impurities that cause nodules and porousness, proof against losses caused by rejects and reworking. Write for complete details or contact your regular plating supplier.**

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has announced the availability of a deburring media called Burr-Eens. Burr-Eens consist of a natural abrasive stated to cut deburring time up to 50 per cent. Burr-Eens do not fracture during operations, thereby eliminating the main cause of scratching and gouging. In tests, Burr-Eens have proven to have longer life. Burr-Eens are available in 9 sizes from No. 00 (1½-2 inches) to No. 10, which corresponds to a 10 mesh.

For information circle No. 6 on Reader Service Card inside back cover.

## New-Type Contact for Daniels Barrels

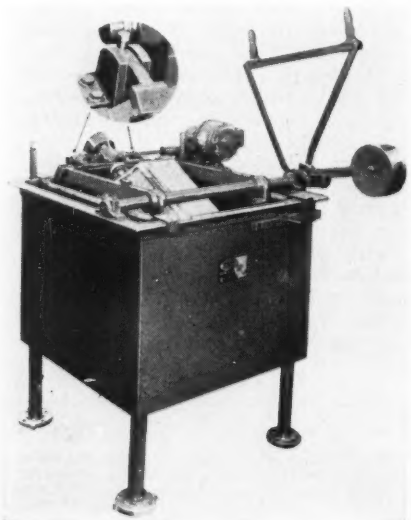
A knife switch type of contact and drive gear positioner has been developed for use with the standard OLS Daniels plating barrels which maintains positive negative contact at all times, it has been announced by Daniels Plating Barrel & Supply Co., 129 Oliver St., Newark 5, N. J.

Illustrated in the inset in the photograph, this new device offers the additional advantage of self-cleaning, increasing the current capacity of the entire unit and substantially raising the overall efficiency of the barrel.

This knife switch also has a set screw mounted through it in order to maintain perfect gear mesh and alignment at all times. This feature has proven valuable in reducing the already low maintenance costs and down time on Daniels barrels by eliminating gear wear.

The knife switch contacts described may be installed on any Daniels plating barrel manufactured since 1946.

For information circle No. 7 on Reader Service Card inside back cover.



Daniels OLS Plating Barrel

## Sand Blast Gun

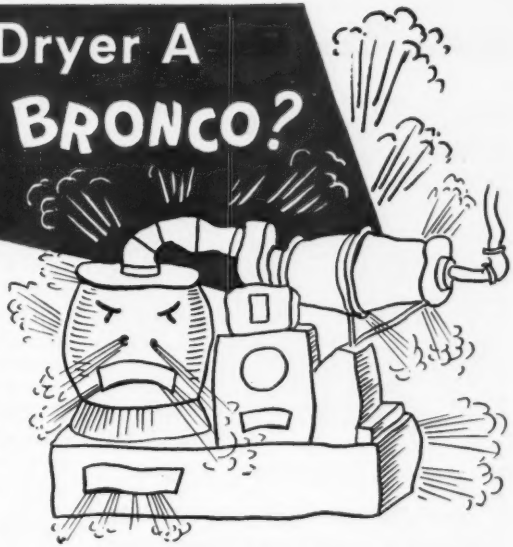
The "Sandstorm" sand blast gun, product of Lindberg Products Co., P. O. Box 885, Los Gatos, California, is a complete unit which will operate on air pressure as low as 60 pounds. However, for best results pressures of 100 to 150 pounds are recommended. The greater the pressure the faster the cutting action.

In selecting the abrasive material for sand blasting the following must be considered; the article being worked, the type of surface desired, the degree of texture, the degree of depth, and the speed of the operation.

Silica sand is the most widely used abrasive for average work, such as removing rust, scale, paint and dirt, and for texturing and etching metals.

Aluminous oxide abrasives are sharper and faster cutting and are heavier than silica sand.

# Is Your Dryer A BUCKING BRONCO?



In order for a centrifugal dryer to stay put it should be heavy. That's why the modern Nobles Dryer is about twice the weight of most dryers. Extra weight is one of the reasons for its stability, its freedom from vibration, its smooth operation, and long trouble-free life.

It's all new in design and principle. A powerful suction fan *draws* the air completely through this modern Nobles Dryer and exhausts it at the bottom! Electric or steam heaters are mounted in the cover of this machine of advanced design for a saving of space and elimination of heat loss.

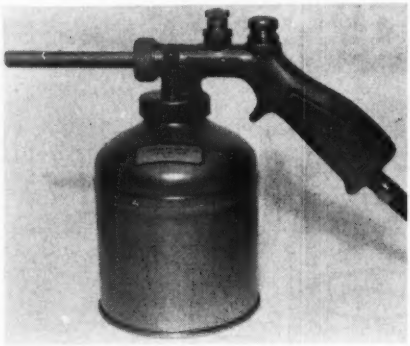
Air moving equipment isn't an extra. The powerful suction fan is an integral design feature of each machine. A brake pedal extending around the entire work area controls an internal, expanding hydraulic brake for quick, smooth stops.

Why not take the first step now toward modern quick drying and lowest costs?

**NOBLES ENGINEERING & MANUFACTURING CO.**

ST. PAUL, MINNESOTA

**Write Today for the FREE NOBLES DRYER BROCHURE**



Sand Blast Gun

Steel shot or steel grits are still heavier and have a hard striking force similar to a bullet in action. Available in a variety of grit sizes, it is used for fast removal of certain types of hard surfaces.

Nut shell abrasives are soft and yet tough and great in resistance to breakdown. They have solved many complicated cleaning problems, because they will not scratch, mar, or pit hard undersurfaces, yet will cut dirt and even polish the hard undersurfaces.

All the abrasives listed can be employed in the "Sandstorm" Sand Blast Gun.

For information circle No. 8 on Reader Service Card inside back cover.

## Elcometer Thickness Gage

The Elcometer, a pocket size thickness gage, which measures non-magnetic protective and decorative coatings on ferrous metal bases with an accuracy of 5± per cent, ± 0.0001 inch, is now available from the Ferro Corporation of Cleveland, Ohio.

This six ounce precision instrument, manufactured by the East Lancashire Chemical Co., Ltd., of Great Britain, is not restricted in use to flat surfaces. It can measure such films as porcelain enamel, plating, paints, foils, plastic sheetings, paper, rubber, lacquers, tinnings, and so on.

The meter incorporates a locking device, permitting the accurate reading of the scale after measuring an inaccessible area where the scale cannot be seen.

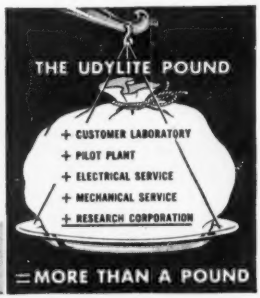
Because the Elcometer doesn't depend on an outside power source, it can be utilized at all points of operation — outside the factory or on the production line.

The Elcometer, which relies upon a strong, specially engineered and extremely durable permanent magnet for its operation, is housed in a two piece aluminum die casting, and is finished in crackle finish. The contact spheres are finished in chrome plating to withstand hard wear.

Why buy just one when the others are free?

BUY WISELY
BUY UDYLITE
PLATING SUPPLIES

THE Udylite CORPORATION

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Most economical, most satisfactory method of

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# IN AND OUT

***Is All It Takes To—***

## • DRY
## • PROTECT

**For those plating silver, brass, or copper—**

Merely out of the last hot water rinse, and in and out of Nikolas **Water Dip Lacquer,** removes all traces of water and deposits a durable transparent coating that will resist fingerprinting, tarnishing and mild scratches that have previously involved unnecessary rejects.

**For those using plated parts in production—**

Parts finished with Nikolas **Water Dip Lacquer,** assure you of untarnished parts, less rejects, and the necessity of ultra careful handling. If the final operation calls for soldering, no preparation is necessary, as the coating provides a chemically clean base metal that assures perfect bonds.

**FOR COMPLETE INFORMATION ON**
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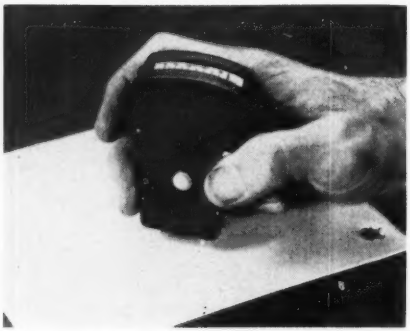


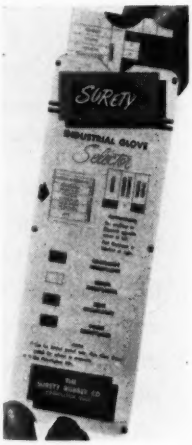
The Elcometer is shown above measuring the thickness of a protective coating on a metal sheet.

For further information write to J. F. Moeller, Dept. TFM, Ferro Corporation, Cleveland, Ohio; or circle No. 9 on Reader Service Card inside back cover.

## Industrial Glove Selector

An industrial glove selector being distributed by the Surety Rubber Co., Carrollton, Ohio, shows at a glance the correct glove for every industrial need by rating gloves according to their resistance to various kinds of destructive elements.

A pocket-size slide chart, the selector shows how each type of Surety industrial gloves — Sureseal, standard synthetic and natural rubber — stands up against more than 70 different kinds of acids, oils, solvents, chemicals, abrasives and natural elements.




Glove Selector

The chart recommends the gloves according to performance where the resistance factor is negligible between gloves or in cases where the gloves are to be subjected to more than one destructive element on the job.

For information circle No. 10 on Reader Service Card inside back cover.

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BUY UDYLITE
PLATING SUPPLIES

THE Udylite CORPORATION

THE UDYLITE POUND
+ CUSTOMER LABORATORY
+ PILOT PLANT
+ ELECTRICAL SERVICE
+ MECHANICAL SERVICE
+ RESEARCH CORPORATION
=MORE THAN A POUND

## New Iridite Finishes

Allied Research Products, Inc., Baltimore, Maryland, manufacturer of the Iridite line of corrosion resistant finishes for non-ferrous metals, has an-

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ROBERTS ROUGE COMPANY
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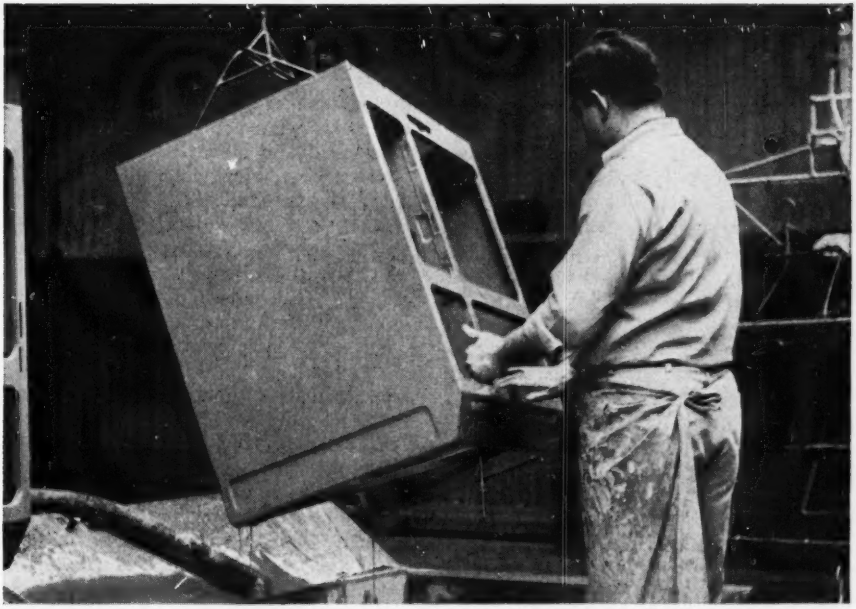
★ Fine buffing compounds are a combination of the best of materials and years of manufacturing experience.

Since 1881 A LONG TIME TO CONTINUE SUCCESSFULLY



Cleaned range body ready for finishing. Pennsalt EC-54 permitted 30° temperature increase in first stage spray, gave faster, thorough cleaning of high-melting-point soils. Parts can now be porcelain enameled without danger of blistering.

## MAJOR APPLIANCE MANUFACTURER ADDS NEW PENNSALT CLEANER GETS "100% CLEANING"

**Pennsalt EC-54 Allows Higher Temperature without Evaporation! Solutions Last Three Times Longer!**

This well-known manufacturer runs a wide variety of hard-to-clean items in sequence through the same spray machine. Every trace of drawing compound and plant soil must be removed, for the next step is porcelain enameling. Rejects due to poor cleaning were frequent.

The Pennsalt representative recommended adding a high-boiling-point emulsion cleaner, Pennsalt Cleaner EC®-54, to the initial cleaning spray. When this was done, the manufacturer found he could raise spray temperatures 30°. This extra heat made the difference between a poor cleaning job and an excellent one. EC-54's high flash point provided a wide margin of plant safety in spite of the higher temperature.

The added emulsion cleaner cut cleaning costs by increasing solution life, too. The #1 tank (Pennsalt Cleaner EC-54 1:100 and Pennsalt Cleaner #32 ¼ oz/gal) is now dumped once a week, instead of every other day. And the #3 tank (Pennsalt Cleaner #32 2 oz/gal) now lasts 10 days, instead of one week.

For more information on trouble-free metal cleaners designed for modern production conditions, call your local Pennsalt Metal Processing Specialist. Or write: Metal Processing Dept., Pennsylvania Salt Mfg. Co., EAST: 803 Widener Bldg., Philadelphia 7, Pa. WEST: 2168 Shattuck Ave., Berkeley 4, Calif.

Pennsalt Chemicals

nounced the development of 5 protective coatings for zinc, silver, copper and aluminum.

Iridites #4.73 and #4.75 (Cast-Zinc - Brite) provide a method of obtaining a bright-type decorative and protective finish directly on zinc die castings. No mechanical finishing is required to produce a lustre, since the lustre is provided by the chemical polishing action of the Iridite solution. In addition, the resultant finish can be used as a preparation for electroplated finishes, if desirable, by chemically removing the protective film. Two solutions are available. Iridite #4.73 is designed for Zamak #3 and similar alloy zinc die castings; Iridite #4.75 is designed for Zamak #5 and similar alloy zinc die castings.

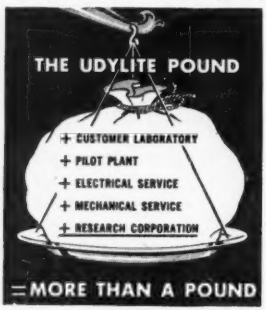
Another Iridite finish is designated as #18-P (Silver-Kote) and provides good tarnish resistance for industrial silver plate. This Iridite process provides a protective coating both in service and storage with minimum effect on electrical characteristics and solderability. Iridite #18-P (Silver-Kote) does not substantially change the appearance of the silver.

A third Iridite process is Iridite #17-P (Cupreous-Kote) which provides greater corrosion resistance and paint adherence for copper and copper alloy surfaces than can be obtained from Iridite #7, primarily a chemical polishing solution. It will perform satisfactorily on any copper or copper alloy without generating smuts and also provides protection for soldered joints. The basic coating resembles the base metal in appearance and can be dyed yellow, red, orange or green for color identification purposes.

Allied Research has also added another process to its line of Iridite treatments for aluminum. The process is Iridite #14-2 (Al-Coat). The operating conditions for Iridite #14-2 can be controlled to produce a finish ranging in appearance from yellow-iridescent to a uniform deep brown. The deep brown finish is more protective than other Iridite treatments for aluminum. It can also be more uniformly dyed but is higher in electrical resistance because of its increased thickness. An outstanding feature of Iridite #14-2 is that the coating can easily be bleached to produce a highly protective clear film.

Like all Iridite finishes for non-ferrous metals, these five products are applied by a simple chemical dip, without electrolysis. The development of these products increases the number of Iridite finishes to a total of 25, for use on: zinc, cadmium, aluminum, copper, brass, bronze, magnesium and silver.


Would you like to get extras for the dollars you spend?




If you would, buy Udylite plating supplies. As a Udylite customer, you get quality plating products with pluses profitable for you.

The Udylite Customer Service Laboratory is at your service to assist in finding the best materials for processing your products. Our Pilot Plant will find the most economical method of obtaining the finish you desire. And our Mechanical and Electrical Service specialists are always available for on-site testing and servicing of any equipment in your plant.

Combined with the superior plating products developed by the Udylite Research Corporation, these extra services insure perfection results at lowest cost. For a pound that's more than a pound, *Buy Wisely—Buy Udylite Supplies.*

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**AUTOMATIC REGULATION** is in top section of plating power supply. Operator sets desired voltage level on control station near tank, and automatic regulation maintains his setting.

# Automatic Regulation on G-E Plating Power Supplies Increases Productivity and Reduces Costly Rejects

Once you have set the voltage or current on an automatically regulated General Electric Plating Power Supply, no further adjustments are needed. Automatic regulation maintains your setting within ±2 per cent, regardless of variations in line voltage or tank load. Equipment is available to automatically regulate voltage or current, or both.

**SAVINGS**—Automatic regulation saves you money several ways. There is no need to check and adjust current or voltage. By eliminating human error, it assures work of more uniform quality. It facilitates continuous production without expensive shutdowns for maintenance or adjustments. Finally, it greatly reduces rejects caused by current or voltage variations.

**FLEXIBLE**—Automatic regulation will maintain any setting between 16 and 100 per cent of rated voltage, or 10 and 100 per cent of rated current. It is available as an integral part of G-E plating power supplies, or can be added later to manually controlled units.

**MORE INFORMATION** is available from any authorized G-E agent, or by writing Sect. 464–15E, General Electric Company, Schenectady 5, N. Y.

**BARREL PLATERS**

Economical, 12-volt barrel platers are available in ratings from 500 to 2000 amperes. Your nearest agent has full information.

*You can put your confidence in—*

**GENERAL ELECTRIC**

Full information on these Iridites, as well as the complete line, may be obtained from Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland, or by circling No. 11 on Reader Service Card inside back cover.

## Cleaner for Spray Washers

Development of an alkaline cleaner for use in mechanical spray washers prior to phosphate coating, and which is entirely free of caustic soda, has been announced by the Detrex Corporation, Detroit, Mich., manufacturer of industrial metal-cleaning equipment and chemicals.

By eliminating caustic soda, the crystalline structure of the phosphate coating is made much finer and more effective. The product may be used at varied concentrations and temperatures for the removal of oils and greases from fabricated parts prior to subsequent operations. The concentration of cleaning compound is entirely dependent upon the type and degree of soil involved.

Among the factors taken into consideration by Detrex in arriving at the new formula were excessive foaming at high concentrations, a problem created by certain similar products, and that high water hardness (25 to 40 grains) had to be overcome in such areas as Indiana and Ohio.

The new cleaning compound has a balanced formulation which permits saponification as well as emulsification of soils when in solution.

For information circle No. 12 on Reader Service Card inside back cover.

## Automatic Spray Coating

Putting more "automatic" into automatic spray coating machines describes two new inventions of D. J. Peeps, engineering vice president of the DeVilbiss Company, Toledo, Ohio, manufacturer of spray painting equipment. The inventions have been assigned to the company.

One invention is designed to move spray guns in synchronization with an article being sprayed, returning the guns to a starting position so another article can be coated in the same manner. The most important factor of the invention is the positive rapid return movement of the spray guns to the starting position.

The other invention is a signalling device which is operated pneumatically. This device is designed to actuate the spray guns when an article is present on the conveyor-supports of the

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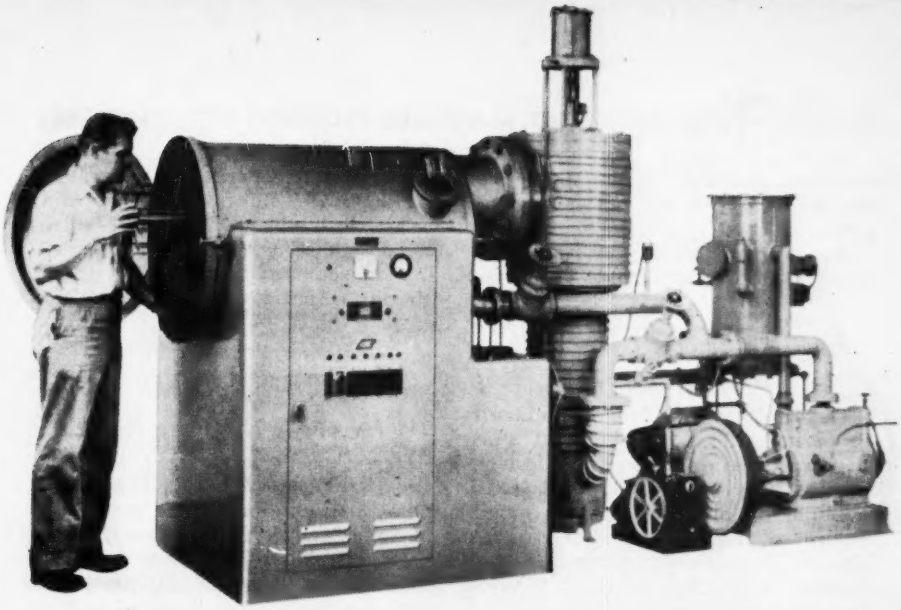

*Just right for the small or medium sized finisher...*

## CVC's new 30-inch high vacuum metallizer

This new *CVC* high vacuum coater, Model LC1-30, was specifically designed to meet the demands for a moderate sized high vacuum metallizing unit.

You don't need to be a high vacuum engineer to set up and operate this new *CVC* coater. It comes complete with all necessary controls—need only be connected to service lines. Here are the details:

- Compact and easy to operate, all cycle switches and valves accessible from one point.
- Simple and inexpensive fixtures are available for either front or second surface coating.
- Two 35-inch long-work holding fixtures will each accommodate over 200 pieces of plastic or metal 1½" in diameter.
- The short cycle time—4 to 5 cycles per hour—gets the work out in a hurry.

If you've been looking for a high vacuum coater that's neither too big nor too small, *CVC*'s Model LC1-30 is your answer. For complete details, write to ***Consolidated Vacuum Corporation, Rochester 3, N. Y.*** (a subsidiary of Consolidated Engineering Corporation, Pasadena, California).

CVC

**Consolidated Vacuum Corporation**

***Rochester 3, N. Y.***

formerly DPi Vacuum Equipment Dept.

***designers and manufacturers of high vacuum equipment***

SALES OFFICES: PALO ALTO, CALIF. • CHICAGO, ILL. • CAMDEN, N. J. • NEW YORK, N. Y.

automatic machine. If the support is empty, the device will not actuate the gun.

For information circle No. 13 on Reader Service Card inside back cover.

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## Pickle Control

Oakite Products, Inc., manufacturer of specialized cleaning and allied materials, has announced the development of Oakite Pickle Control No. 5, a liquid inhibitor for sulfuric, hydrochloric or phosphoric acid or mixtures thereof. It provides a controlled foam blanket on pickling solutions in addition to performing its inhibiting function. It is designed for use in continuous steel strip mills where addition of an inhibitor through proportionating equipment is preferred, and in batch pickling operations as well.

Oakite Pickle Control No. 5 is a viscous red-brown liquid with a characteristic odor. It has a pH that is approximately neutral and a bulk density of 8.74 pounds per gallon. Normal range of the inhibitor concentration is said to be 0.1 to 1 per cent by weight of concentrated acid in the solution, with Oakite Pickle Control No. 5 being added either manually or by proportionating equipment to the acid solution at its operating temperature.

Additional information regarding this new, liquid pickle control will be sent, without charge, to readers writing on company letterhead to Oakite Products, Inc., 120 Rector Street, New York 6, N. Y.

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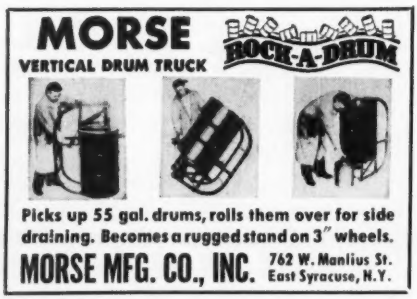
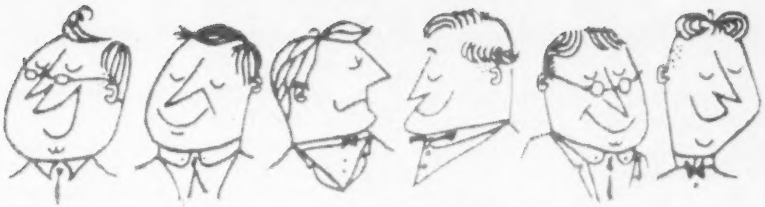
## NesTier Hopper Rack

The Chas. Wm. Doepke Mfg. Co., Inc., 8898 Blue Ash Rd., Rossmoyne, Ohio, has announced the availability of a rack and lid combination that converts standard NesTier materials handling boxes into small parts hoppers for use in assembly and production operations. The Hopper Rack is stated to eliminate rehandling of parts at assembly area, to provide a constant supply of readily accessible parts at worker's fingertips, to permit rapid replacement of empty units, to simplify the job of keeping work stations supplied, to reduce damage or loss incurred in rehandling parts, and to facilitate more accurate inventory control. Available in two sizes, the all-welded heavy-gage steel units utilize standard No. 120 and No. 175 NesTier boxes to provide a wide range of hopper combinations. Rack design permits multiple unit installations by merely bolting



MORSE
VERTICAL DRUM TRUCK
ROCK-A-DRUM
Picks up 55 gal. drums, rolls them over for side draining. Becomes a rugged stand on 3" wheels.
MORSE MFG. CO., INC.
762 W. Manlius St.
East Syracuse, N.Y.



# **SIX** heads are better than one

**WHEN PRODUCTION LAGS IN YOUR FINISHING DEPARTMENT . . .**

. . . especially if they are on a No. 13-10 PACKER-MATIC automatic polishing and buffing machine (shown below). Cost-conscious *production men know* from experience that these famous Packer-Matics can buff, polish or deburr faster, more economically and with greater uniformity than hand operation.

packermatic Model 13-10 has a standard indexing speed of from 190 to 1000 pieces per hour.

packermatic flexibility turns "specials" into routine jobs, cuts finishing costs wherever used.

packermatic interchangeable heads, simplicity of set-up and ease of operation speeds up production.

packermatic versatility can handle multiple contour units with maximum efficiency and speed.

packermatic vital parts are lubricated under pressure and protected in dust proof oil reservoir.

packermatic finishing techniques — with automatic equipment — increases customer satisfaction and profits.

*OUR ENGINEERING STAFF INVITES YOUR INQUIRY.*

## *PACKER-MATIC*

***AUTOMATIC MACHINES FOR BUFFING • POLISHING • DEBURRING***

**THE PACKER MACHINE COMPANY • MERIDEN, CONN.**

*Prepared by The P. W. Prelle Company, Hartford, Conn. No. 3644*
*Metal Finishing May, 1954, Products Finishing June, 1954 Ad No. 542.*

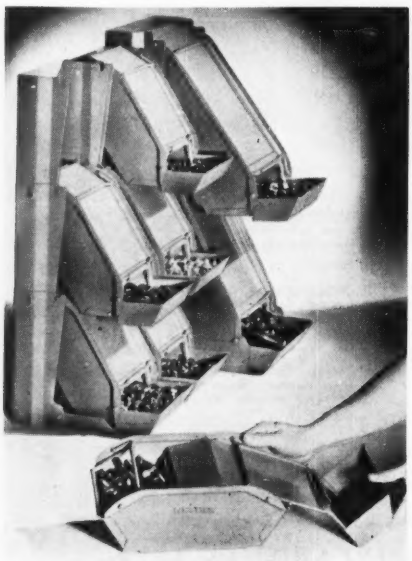
sections together vertically, side-by-side or back-to-back. Racks can be bench- or wall-mounted to meet individual requirements.

In use, a full NesTier box is converted into a hopper by means of a combination lid and tray that fits under the handles and snaps into place. Tray is designed for three-finger withdrawal of small parts. With lid attached, the box is hung on the Hopper Rack, which supports it at a 45 degree angle. When the box has been emptied, it is lifted from the rack and the lid is quickly removed. The lid then is attached to a full NesTier box, which is hung on an empty station in the rack. This replacement can be accomplished in seconds. For immediate accessibility of additional parts, any required number of compact NesTier boxes, with or without the hopper lid attached, can be tiered adjacent to work stations. Minimum floor space is required.

Because of ease of handling when full, NesTier tote boxes can be filled at a central point, batch weighed and stacked on pallets or skids for delivery to assembly and production areas by means of hand or power lift trucks. Nesting design of NesTiers permits a large number of empty units to be stacked in minimum space for temporary storage.

NesTier Hopper Racks can also be used as storage bins for a wide variety of small parts. Quick identification of contents as well as ease of access are assured. Flexibility of installation permitted by rack's design provides for almost unlimited variety of combinations to handle small parts.

For information circle No. 15 on Reader Service Card inside back cover.

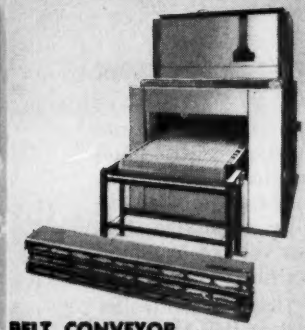


NesTier Hopper Rack

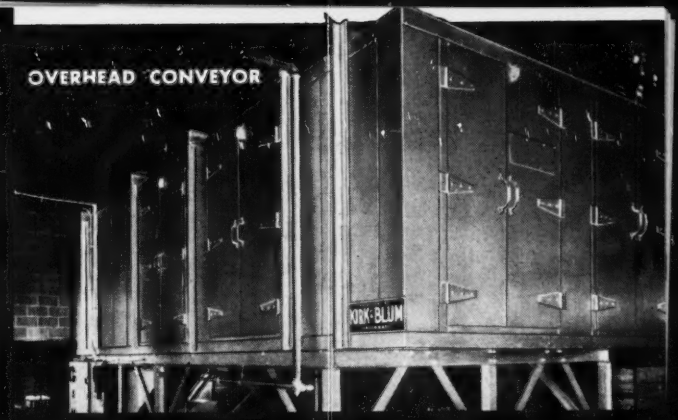
## Orbital Type Air Sander

Intended for use on metal, wood, and plastics, an orbital-type air sander which is designed for fast material removal has been announced by Sundstrand Machine Tool Co., Pneumatic Div., Rockford, Ill. The sander has a speed of operation up to 6,000 cycles per minute and incorporates a built-in water attachment for wet sanding. Designed to fit snugly into the palm of the hand, the unit weighs 4½ lb. and is counterbalanced to minimize vibration and reduce fatigue. According to the manufacturer, air consumption is low, requiring only 5½ to 7 cubic feet per minute.

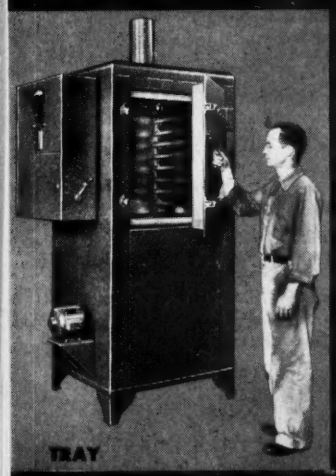
Unique pad control is said to eliminate side sway, making it possible for the sander to be used next to edges and moldings and in tight corners without damaging the workpiece or without resource to hand sanding. The palm



BELT CONVEYOR




OVERHEAD CONVEYOR



TRAY

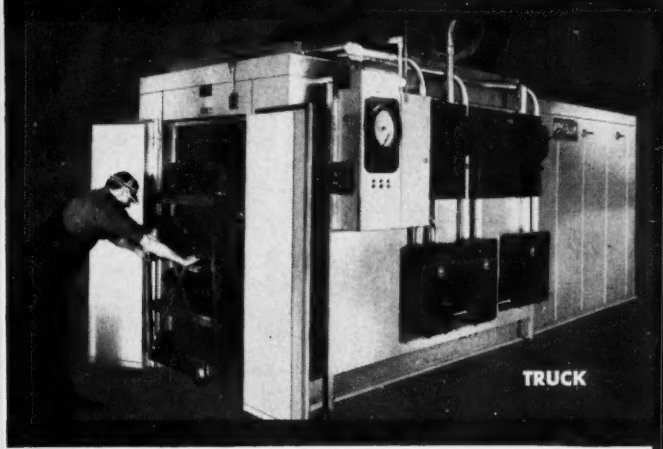
# what type OVEN do you need?

## KIRK AND BLUM INDUSTRIAL OVENS

Your oven needs . . . large or small, batch or conveyorized production, for drying, baking or dehydrating . . . can be filled by KIRK & BLUM.

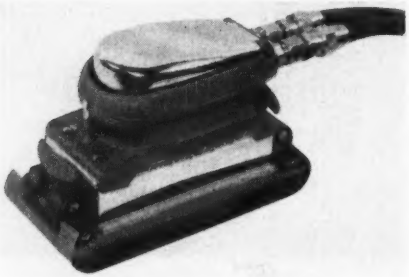
Compactly designed and expertly engineered to meet specific requirements, these typical installations show the wide range of KIRK & BLUM experience over more than 47 years. Often, ovens up to freight car size are shipped assembled, ready to operate.

Put this skill and experience to work on your industrial oven problem. For complete information and booklet, write: The Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.



TRUCK

KIRK AND BLUM
INDUSTRIAL OVENS



Sundstrand Orbital-Type Air Sander

lever control located on top of the unit operates both air and water by a slight downward pressure.

For information circle No. 16 on Reader Service Card inside back cover.

## Automatic Plating Controller

Unit Process Assemblies, Inc., 75 East 4th St., New York., has developed an automatic current and voltage control for all types of plating solutions.

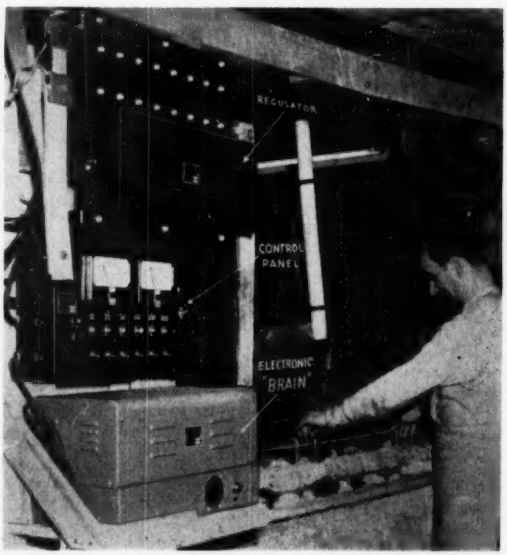
Known as the Automatic Plating Controller (A.P.C.), its use eliminates the setting of switches when loading or unloading tanks, since the current and voltage automatically adjust to changing loads. The A.P.C. is applicable to all plating solutions, and all tanks can be controlled by one supervisor from any remote location.

The A.P.C. is easily connected in the D.C. bus-bar line between the tank and the power source (either rectifier or generator), in place of the rheostat ordinarily used. The voltage control knob on the electronic device is pre-set to the desired tank voltage, and the controller automatically maintains this voltage, reducing the voltage for small loads to prevent "burning."

The Automatic Plating Controller will be demonstrated at the American Electroplaters' Society Convention, July 12th to 15th, in New York City. Literature available.

For information circle No. 17 on Reader Service Card inside back cover.

**The year 1953 was the 150th anniversary of the discovery of the precious metal palladium by the noted British scientist, Dr. William Hyde Wollaston. Two impressive exhibits commemorated this event, one in London, England, in October, which was opened by H.R.H. The Duke of Edinburgh; the other at The Franklin Institute, Philadelphia, Pa.**




Automatic Plating Controller

# Wonder chemical

## CHANGES METAL SURFACES, MAKES PAINTED PRODUCTS *look better longer*

NOT ALL "wonder chemicals" are new! Here's one that for more than a score of years has been doing a job that manufacturers at first said couldn't be done.

In as little as sixty seconds, Bonderite changes the surface of metal parts to a *nonmetallic* layer of unusual properties. Bonderite is used on automobile bodies, refrigerator cabinets, transformers, hardware, and metal furniture, to name a few items out of thousands.

This nonmetallic coating does several amazing things. Because it has an affinity for organic coatings and is integral with the metal, it takes and holds paint securely, preventing chipping and peeling. It acts to keep moisture from reaching the metal, thus controlling rust and corrosion. And should the paint film be damaged by accidental scratch or dent, Bonderite prevents the spread of finish failure.

All of these benefits combine to mean lasting fine appearance for those thousands of products whose manufacturers use Bonderite before painting.

Unlike many "wonder chemicals," Bonderite requires no special handling. It produces excellent results in large and small installations, in spray and immersion applications, and on steel, aluminum, zinc, or cadmium and their alloys.

The cost of Bonderite is small—a fraction of a cent per square foot of area treated—and the benefits are great.

Your inquiry will get prompt, expert, helpful attention.

*Bonderite, Bonderlube, Parco, Parco Lubrite — Reg. U.S. Pat. Off.

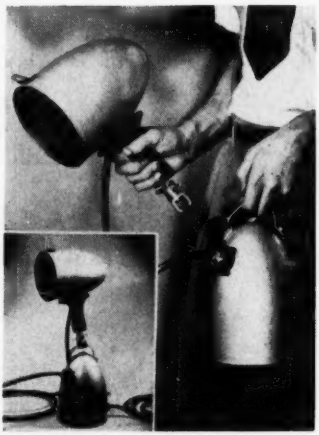
# Parker

**RUST PROOF COMPANY**

2172 East Milwaukee, Detroit 11, Michigan

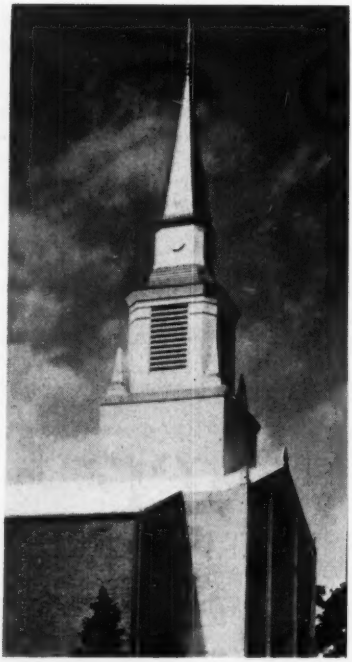
| BONDERITE | BONDERITE and BONDERLUBE | PARCO COMPOUND | PARCO LUBRITE |
|---|---|---|---|
| corrosion resistant paint base | aids in cold forming of metals | rust resistant | wear resistant for friction surfaces |

# Finishes



THE Mineralight, a black light inspection unit, is constructed of a spun metal shell, finished in gray hammertone baked enamel.

*(Photo courtesy Ultra-Violet Products, Inc., South Pasadena, Calif.)*



THE first porcelain enameled church steeple built in the United States was built by the Bettinger Corporation of Waltham, Mass., for the Central Park Baptist Church in Birmingham, Alabama.

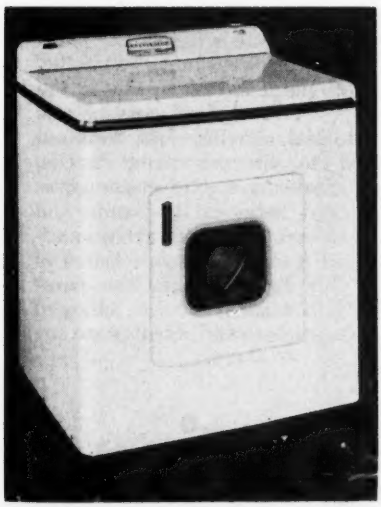
The steeple, 147 feet high, is constructed of 16-gauge enameled iron facings braced by 14-gauge enameled iron channels. The main structure is coated with gray-tinted mat-finish porcelain, and the curved sections of the steeple and spire are coated with porcelain tinted a soft green.

*(Photo courtesy the Bettinger Corp., Waltham, Mass.)*

# *that aid in appearance and utility*

THIS piece of stainless steel wire sculpture was formed from 18-8 stainless steel wire and electropolished to produce a bright finish.

*(Photo courtesy Armco Steel Corp., Middletown, Ohio)*



THE steel cabinet of the Kelvinator Dryer is phosphatized, then sprayed with an Epon resin primer and baked for 30 minutes at 300 deg. F. A finish coat of white synthetic enamel is then applied and baked on for 30 minutes at 300 deg. F. The steel drying cylinder is finished in porcelain enamel.

*(Photo courtesy Nash Kelvinator Corp., Detroit, Mich.)*

Practical Applications of modern products

## Motors Painted by Electrostatic Process

By TONY SLAVIK,
Plant Supt.,
Ohio Electric Manufacturing Company

WHEN we first had the idea of painting a completely assembled motor, some people said it couldn't be done.

After extensive tests, we are presently spray painting six types of electric motors automatically with the Ransburg No. 2 Process. By developing different type hangers and designing practical masking methods, we plan to handle other types later. As far as we've been able to determine, our finishing operation is unique in coating completely assembled motors.

Formerly, the frame, cover and terminal boxes of our motors were hand sprayed. Production is speeded up now with the use of electro-spray.

Our overhead conveyor line is 290 feet in length, and operates at 2 f.p.m. The completely assembled motors are spaced on fixtures at 18-inch centers on the line.

Just before the motors enter the paint area—where they are coated with black wrinkle enamel—masking is applied to parts not to be painted (Fig. 1). The Ransburg unit consists of two, 2-inch atomizing heads, one on either side of the line. The motors are rotated as they pass through the electrostatic spray area (Fig. 2). No compressed air is used in the Ransburg No. 2 equipment, the paint being electrostatically charged and atomized simultaneously. Rapid rotation of each of the atomizing heads spreads the paint uniformly over the inner surfaces, causing the paint to flow evenly to the outer edges. A source of electrostatic high potential, having one terminal connected to the atomizing heads, creates a strong electrostatic field between the heads and the motors which are grounded by the conveyor. Force of this field changes the paint into a spray of fine, charged particles, and creates an ir-

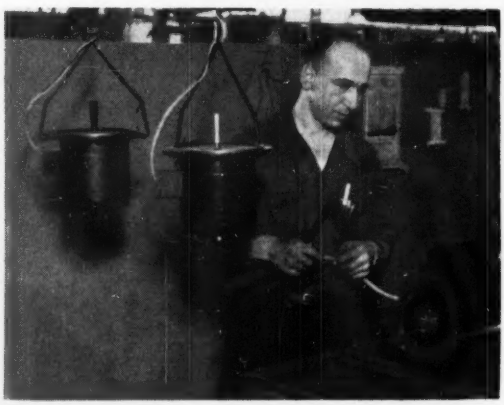


Fig. 1—Joe Hurban, motor room foreman at Ohio Electric, is shown at the loading station where masking is applied to unpainted motor parts. Here, ¼ h.p. oil burner motors are being loaded on the conveyor.

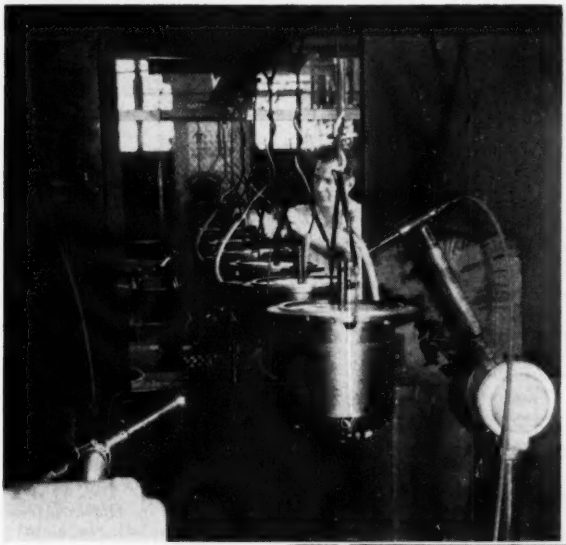


Fig. 2—Two Ransburg bells atomize the paint and electrostatically coat assembled motors as they rotate through the painting area. After painted motors leave the paint area (background of photo), masking is removed and weighted connections are attached.

●

resistible attraction that pulls the spray particles to the grounded motors.

As the painted units leave the paint area—and before entering the overhead infra-red oven (Fig. 3), the masking is removed, and a weighted connection is attached for the motor "run in."

After 24 minutes of baking at 300 to 325 deg. F., depending upon the motor size, the motors move along the line to the "break-in" area.

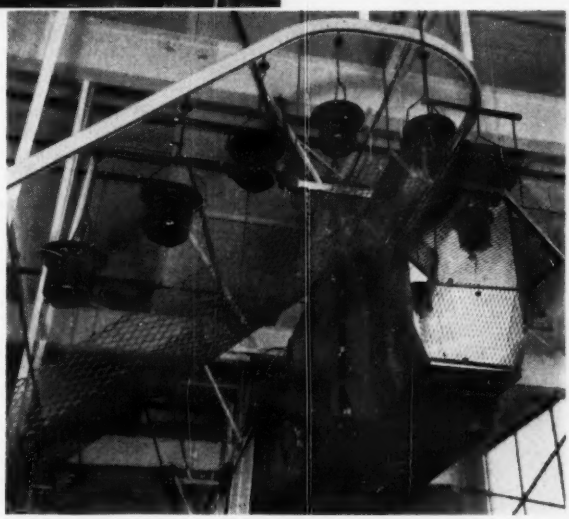


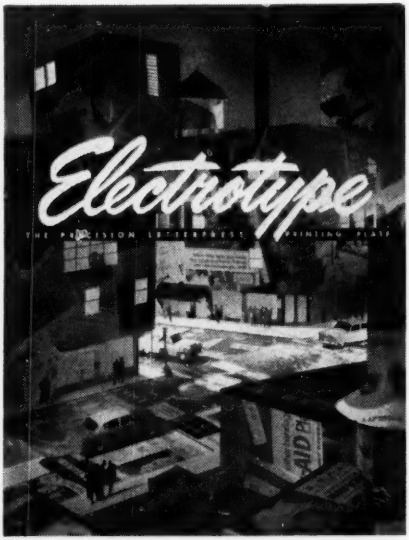
Fig. 3—Painted units move at 2 f.p.m. into the overhead infra-red oven where they are baked for 24 minutes. *(Photos courtesy Ransburg Electro-Coating Corp., Indianapolis 7, Indiana)*

Here, the weighted connection runs in a live track for the "run in." Tubing along the sides of the work holders prevents the motors from spinning during the breaking in period.

Motors are removed from the overhead conveyor at the testing station. After complete checks and tests, the motors move along another conveyor to the packing and shipping area.

---

**"THE ELECTROTYPE — THE PRECISION LETTERPRESS PRINTING PLATE."** More than 200 independent electrotypers and stereotypers, affiliated with the **International Association of Electrotypers and Stereotypers, Inc.**, 701 Leader Bldg., Cleveland, Ohio, have cooperated in the production of a documentary movie showing the multiple stages in the production of an electrotype. Anyone desiring to show this 16-mm. 27½-minute sound-color movie should contact a local electrotyper or stereotyper, or the Association.




Scenes from the film, showing some of the 30 basic steps in the actual production of an electrotype, are previewed in a four-page audience presentation brochure, also available from the Association.

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**STEWART'S SCIENTIFIC DICTIONARY.** Fourth Edition. Available from **Gardner Laboratory, Inc.**, Bethesda 14, Maryland. Compiled by Jeffrey R. Stewart. 1,000 pages, (approx.). Fabricoid binding. $10.50 postpaid.

This reference volume covers all of the more widely used terms in the chemical processing industries, including such fields as plastics, paints, soaps, detergents, ceramics, textiles, adhesives, abrasives, insecticides, industrial chemicals, fungicides, packaging materials, petroleum, and others.

Dual 5 H.P. Motor Driven **POLISHING LATHE**
**$795.00**

Single 5 H.P. Motor Driven **POLISHING LATHE**
**$450.00**

An outstanding value! Rugged ½" steel fabricated construction. Simple design permits shaft assembly to be removed as a unit. Heavy 1 1/8" polished and ground shaft. 17" spindle clearance with L & R inside threads. Tried, proven and accepted by thousands of satisfied users.

**METAL FINISHING MFG. CORP.**
89 North 11th Street Brooklyn 11, N. Y.
*SERVICING THE INDUSTRY FOR 35 YEARS*

# NORTHWEST

*the answer to a search for*
*A BETTER WAY!*

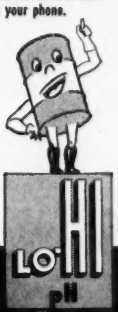
Mariner . . . Trapper . . . Woodsman . . . Pioneer . . . searching with such determination to find a Northwest Passage that now the name NORTHWEST has become symbolic of the better way.

NORTHWEST CHEMICAL'S Cleaning Specialists carry on that constant exploration in the lab and in the field for better ways to solve the complex cleaning problems of modern industry.

NORTHWEST'S search for the better way has developed such production-tested processes as LO-HI pH—for cleaning prior to plating, painting, or vitreous enameling; ALKALUME—for preparing aluminum for finishing and spot welding; INTERLOX—for phosphate coating; SPRA-LUBE—to control over-spray of "today's" paints in water wash paint booths; PAINT STRIPPERS—specific to your needs; SUPER-DRAW and FLUID FILM—for drawing metals.

**Remember—YOUR COST PER FINISHED ARTICLE IS THE TRUE COST OF YOUR CLEANER.**

Northwest's production-tested chemicals and "Right the first time" recommendations will save you money. Northwest Service is as close as your phone.



**NORTHWEST CHEMICAL CO.**
9310 ROSELAWN DETROIT 4, MICH.
pioneers in pH cleaning control serving you since '32

# NEWS of the Industry

## COMPANIES

The Metal Cleaner Department of **COWLES CHEMICAL COMPANY** of Cleveland held its eighth annual sales conference at the company's general offices recently.

Earl Clark, department manager, led discussions on old and new products and outlined the company's future sales aims. He was aided by Carl Clabaugh, assistant department manager, and Dr. John B. Davidson, director of research.

It has been announced that the **AMERICAN CHEMICAL PAINT COMPANY** will present college scholarships of four years' duration to two Ambler Joint High School Graduates. One scholarship will be for study in the field of chemistry, or chemical engineering; the other will be in agriculture.

Selection of the recipients is to be made by a committee composed of members of the administrative staffs of the American Chemical Paint Company and the Ambler Joint High School; and the

Cowles technical men in attendance were (front): George Parisho (St. Louis), Clay Sayers (Cincinnati), George Woleben (Upper New York State), President W. F. Huntley, Secretary-Treasurer W. M. Clessey, Earl Clark, Carl Clabaugh. (Rear) Gene Brost (Syracuse Laboratory), Charles Churchill (Cleveland), Dr. John Davidson (Syracuse Laboratory), Gene Rechlicz (Milwaukee), Fred Hitchcock (Detroit), John Cloonan (Boston), Gene Garman (Chicago), Clyde Lowe (Cleveland), Luther Fuelling (Cleveland), and Jack Dobson (New York).

# *Good Barrel Finishing Costs Less with The Abbott Method*

It's a fact! The Abbott Method of Barrel Finishing reduces costs because it features long-lived Abbott Burnishing Shapes. Made of selected carbon steel — deep hardened — tempered and polished to a mirror-like glass hard finish, Abbott Shapes make efficient contact on all sizes and designs of stampings and castings. Abbott Burnishing Shapes last longer, burnish more parts and cost less in the long run. Used in Abbott Vertical Barrels they make an unbeatable barrel finishing combination!

For Proven Performance . . . use The ABBOTT METHOD.

**Improved Abbott Barrel!**

Write for details . . . today!

ABBOTT

**THE ABBOTT BALL COMPANY**
1064 New Britain Ave.
Hartford 10, Conn., U.S.A.

awards will be announced at the annual Commencement Exercises of the Ambler Joint High School.

Creation of the American Chemical Paint Company Scholarships reflects the company's continuing interest in technical education and its awareness of the importance of the two fields in which it has pioneered for forty years.

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**ENTHONE, INC.**, 442 Elm Street, New Haven, Connecticut, has announced that it has granted a license to **MacDERMID, INCORPORATED,** Waterbury, Conn., under the Springer and Meyer Patent No. 2,649,361 assigned to Enthone, Inc.

This patent covers a process for the non-electrolytic stripping of nickel and other metals. MacDermid, Incorporated, now is licensed to sell compounds for use in this process.

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First employee to leave **HANSON-VAN WINKLE-MUNNING COMPANY** under H-VW-M's new retirement plan is James J. Gormley of Matawan, who retired after 42 years with the company.

Louis M. Hague, president of H-VW-M, formally presented Mr. Gormley his first monthly retirement check.

Mr. Gormley was employed in the company's tin can shop, where he spent most of his working hours during the past 34 years. When he joined the company in 1912, he fired boilers at first, and then worked in the anode foundry.

Under the company's new plan, the normal retirement age is 65. Provisions for earlier retirement after reaching 55 are also provided for employees who have 15 years of continuous service.

Founded in 1820, Hanson-Van Winkle-Munning Company is today one of the leading manufacturers of electroplating and polishing equipment and supplies. With plants in Anderson, Ind., and Matawan, the company maintains sales offices in all principal cities in the United States.

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Three hundred and fifty stockholders and employees of **OAKITE PRODUCTS, INC.**, gathered for the company's 28th annual meeting on April 8. John A. Carter, president, reported that billings in the month of March were higher than in any other month in the company's 45-year history. "The fact that the first quarter of 1954 was better in this respect than any other first quarter period, confirms the optimistic forecast which we made in January," Mr. Carter stated.

At the meeting Mr. Carter outlined the advances made in 1953 by the company, leading manufacturer of industrial cleaning and related materials. Seventeen new technical service representatives were added to the company's nationwide field staff, which now numbers 235 men; new divisions were added in the Pittsburgh area, and in the aviation industry. Ten new products for industrial production and maintenance cleaning were successfully introduced.

Mr. Carter emphasized the importance of the company's research program in maintaining the company's sound position and discussed the move of the research, service, and engineering laboratories to new, larger quarters at 350 Hudson Street, New York City, in May.

(Left to right) Donald Wier, H-VW-M plant superintendent; James L. Gormley; Louis M. Hague, H-VW-M president.

# When Electro-Cleaning..

## ..get ALL these results!

1. ***FAST, EFFECTIVE CLEANING*** insured by the ability of the cleaning solution to carry high current densities.
2. ***MINIMUM CLEANING COSTS*** resulting from long-lived cleaning solutions.
3. ***FLEXIBLE OPERATION*** from the use of a cleaner that can be employed for either anodic or cathodic cleaning.
4. ***DOUBLE-ACTING RESULTS*** from a cleaner that works chemically as well as electrolytically.
5. ***NO ATTACK ON METALS*** by making sure that your cleaner is safe for the metals you process.

Magnus makes a complete line of Electro-Cleaners. You can get ALL these results on *your* work by using the Magnus material that has demonstrated its superiority on aluminum, soft metals, die cast, steel or combinations of any of these metals.

*The Magnus laboratory is always ready to make test runs on your particular metal units to determine which Magnus Electro-Cleaner is best suited to your work.*

magnus

**MAGNUS CHEMICAL CO., INC.**
**208 South Ave., Garwood, N. J.**
In Canada—Magnus Chemicals, Ltd., Montreal
*Service Representatives in Principal Cities*

The **PENNSYLVANIA SALT MANUFACTURING COMPANY** will establish two new operating divisions, according to an announcement by President George B. Beitzel.

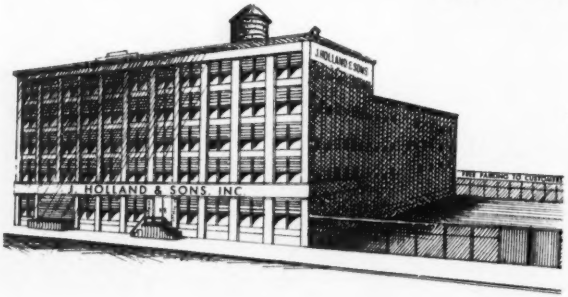
The new divisions, the Industrial Chemicals and the Chemical Specialties Divisions, will function as complete operating units responsble for both the manufacture and sale of their respective products. Other units already operating on this basis are the Pennsylvania Salt Manufacturing Company of Washington, Sharples Chemicals, Inc., and Pennsalt International Corporation.

Three major personnel appointments also have been announced. **WILLIAM P. DRAKE**, former vice president in charge of sales has been named president of the Industrial Chemicals Division; **ALBERT H. CLEM**, former general sales manager, has become president of the Chemical Specialties Division; and **WILLIAM F. MITCHELL**, formerly head of Pennsalt's manufacturing activities, has been named vice president in charge of Engineering, Purchasing, and Traffic for the consolidated company.

## NEW PLANTS

**J. HOLLAND & SONS, INC.**, manufacturer and distributor of metal finishing equipment since 1904, has announced that the company has begun moving into new quarters at 475 Keap Street, Brooklyn, N. Y.

The 110,000 square foot modern manufacturing plant is located in the heart of industrial Brooklyn, a short distance from the present Holland building. The new plant will house one of the largest stocks in the industry and includes a spacious parking lot for Holland customers.




New plant of J. Holland & Sons, Inc.

R. A. Weaver, chairman of the board of **FERRO CORPORATION**, has announced that Ferro's newest foreign affiliate, Ferro Enamel de Chile-Esmaltes Para Enlozer-Ltda (Ferro-of-Chile), in Santiago, Chile, is now in full-scale production. This tenth addition to the Ferro group of international associates is not a wholly-owned subsidiary, but operates under a licensee agreement by which Ferro Corporation provides technical service.

Ferro of Chile started producing Ferro Porcelain enamel frit in 1953 and has built up its operations until it is now in full production at its maximum capacity.

Enrique Wurth, manager of Ferro-of-Chile, was assisted in the first stages of production by M. L. Simmons, ceramic engineer in Ferro's International Division, who spent a year and half in Chile, returning to Cleveland last February.

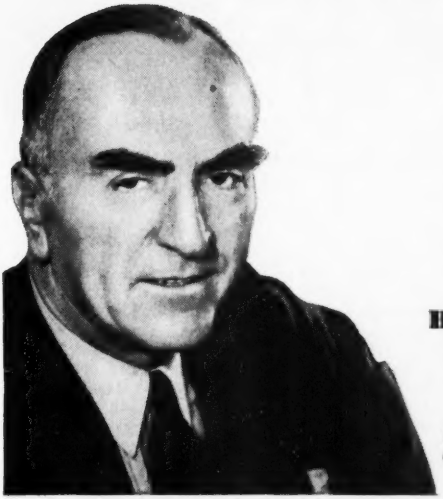
Ferro-of-Chile is presently producing cast iron and sheet steel ground and cover coats for the sheet steel cooking utensil, flatware, and cast iron sanitary ware industries.

## NEW POSITIONS

Joseph A. Hager, vice president and director of sales of Grand Rapids Varnish Corporation, has announced the appointment of **FRANK E. EHRETT** as sales manager, Metal Finishes Division in Grand Rapids, and **VERNOR H. MOORE** as sales manager, Trade Sales Division. Both men will make their headquarters in the home office in Grand Rapids.

Mr. Ehrett has long been active in the industry in a similar capacity with one of the country's recognized producers of industrial product finishes. He will supervise the company's expanded and intensified activities in the field of finishes for products fabricated of metal.

Mr. Moore comes to the company after thirteen years of experience in this field in the employ of one of the country's largest manufacturers of paints for the interior and exterior of homes and for all equipment and plant maintenance.



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*Capt. Eddie Rickenbacker*
**Chairman of the Board and General Manager, Eastern Air Lines**

In an industry beset with red ink, Eastern Air Lines has shown a profit every year since the Captain took over the controls. The fact that Captain Rickenbacker and the stalwart Eastern team of executives, engineers, pilots, traffic experts and weather wizards who back him up read their Business Publications page by page, issue by issue, is a tribute to the editing and publishing skill of this great group of periodicals.

Like Captain Rickenbacker and his associates, other business and professional leaders throughout the country are depending on the business publications which cover their own fields to bring them vital news of products, methods, markets and men. They look upon the Business Press as a superbly organized intelligence service covering dozens of specific fields. Each issue of a business publication is a special report. Because these men who influence buying read business periodicals eagerly and thoroughly, the advertising pages of the Business Press form a *direct sales channel for products and services that are sold to business and professional men.*

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*The United Business Press*

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Hanson-Van Winkle-Munning Co., Matawan, N. J., has announced the appointment of **ROBERT M. NORTON** as vice president and **MYRON B. DIGGIN** as assistant vice president. Both will continue their responsibiltes as sales manager and technical director, respectively.

Myron B. Diggin (left), Robert M. Norton

Sales manager for the last four years, Mr. Norton has been with H-VW-M for 14 years. He joined the company as a salesman, became sales representative in New York State in 1941 and four years later was appointed district manager of the state. A year after that his managerial responsibilities were expanded to include upper New England. In 1948 he moved into the home office as assistant sales manager.

Mr. Norton was graduated from Dartmouth College with an A.B. degree in 1933, and took post graduate courses in chemistry at Rutgers University.

Mr. Diggin has been with H-VW-M for the past 24 years, and was appointed technical director eight years ago. He joined H-VW-M as a chemist, and was appointed chief chemist in 1933. His work has resulted in a number of developments and patents, particularly in the deposition of cadmium, zinc and lead; in rack coatings; anode diaphragms, and regenerative plating systems. In his new assignment, Mr. Diggin is expected to devote more time to the specific development and use of H-VW-M electrochemical processes.

He was graduated from Wesleyan University with a B.S. in chemistry in 1926, and was awarded an A.M. degree from the same university two years later.

A lecturer and author of numerous technical articles, Mr. Diggin is a member of the Electrochemical Society, American Chemical Society, American Ordnance Association, American Electroplaters' Society, American Society for Testing Materials, Institute of Metal Finishing, American Institute of Chemists, and Research Committee of the American Electroplaters' Society. In 1946 he was awarded the A.E.S. gold medal.

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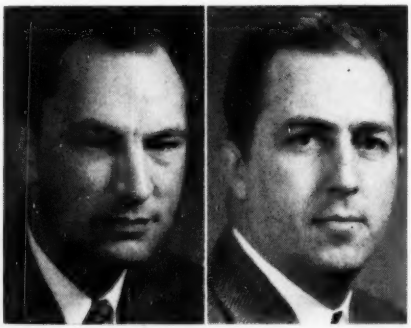
Two personnel changes involving executive positions in Pittsburgh Plate Glass Company's paint division have been announced by E. D. Peck, vice president in charge of the paint and brush division.

**HOWARD J. MATHER** has been named general manager of industrial sales for the paint division. **GEORGE P. MYERS** has been appointed industrial sales manager of the Suydam Division in Pittsburgh.

Mr. Mather joined Pittsburgh Plate as a sales trainee in 1939 at the Milwaukee paint factory. After serving as industrial sales representative in the Cleveland, Chicago, and Davenport, Iowa, territories for nine years, he became assistant general sales manager, industrial finishes, in 1949.

Since 1952 Mr. Mather has been sales manager of the Suydam Division. He will make his headquarters at the general offices in Gateway Center.

Mr. Myers has been associated with the industrial finishes division since 1937.

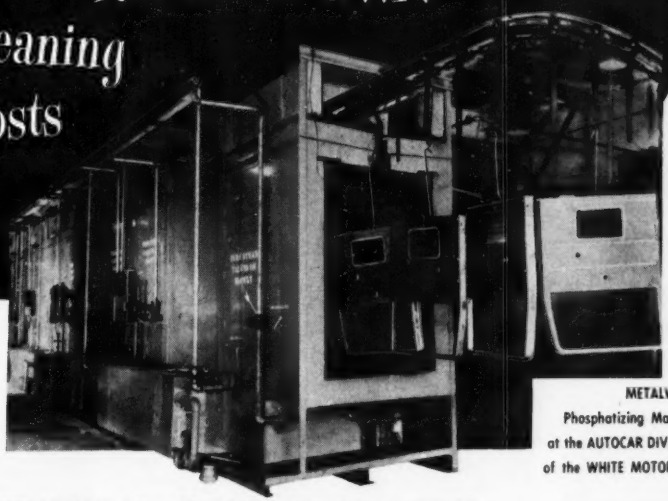


George P. Myers (left), Howard J. Mather

Prior to his appointment, he was assistant general sales manager, industrial finishes. In his new position, he will make his headquarters at the Suydam Division in Pittsburgh.

# Do a Better Job Faster . . .

## cut cleaning costs RIGHT DOWN THE LINE!



METALWASH Phosphatizing Machine at the AUTOCAR DIVISION of the WHITE MOTOR CO.

**METALWASH Phosphatizing Machine provides superior pre-paint surface at PROVEN COST SAVINGS**

**METALWASH** designs and manufactures a complete line of pre-paint machines for Phosphatizing, Bonderizing, and Alodizing.

**METALWASH**-designed Phosphatizing Machines are available for every application from the simple *phosphate-cleaner* to the multi-stage *wash, rinse, phosphate coat, rinse, acid rinse,* and *dry* machines.

"*. . . with our* **METALWASH** *Phosphatizing Machine we have achieved substantial product improvement and considerable cost saving, together with elimination of paint failures in the field,*" states Robert Hood, Supervisor of Mfg. Research of the Autocar Division of the White Motor Co.

**METALWASH VAPOR DEGREASERS** *provide new speed, economy, durability.*

**METALWASH SPOTLESS DRYER** *eliminates hand-wiping of lacquered or plated parts.*

**METALWASH TRIPOLI REMOVER** *automatically removes tripoli and rouge.*

**METALWASH®**

WASHING PICKLING DRYING
PHOSPHATIZING DEGREASING

**METALWASH MACHINERY CORPORATION**
**915 North Avenue, Elizabeth 4, N. J.**
In Canada, Canefco, Ltd., Toronto, Ontario

Collin F. Stevens

**COLLIN F. STEVENS** has been added to the Buffalo office sales staff of Frederic B. Stevens, Inc., to represent Metal Finishing Sales.

Before joining Frederic B. Stevens, Inc., he was a local manager for the Boston office of Corn Products Refining Corporation for six years. His military service covers two years with the U. S. Navy.

Stevens' addition is another step in the company's broad policy of giving more service to its customers.

---

Walter A. Mazan

**WALTER ALBERT MAZAN** has been added to the Industrial Department service staff of Wyandotte Chemicals Corporation. He will be connected with Wyandotte's Cleveland sales office and will headquarter in Toledo, Ohio.

Mr. Mazan is a graduate of the University of Toledo, majored in chemistry, has done metallurgical work at Georgia Institute of Technology and has supervised a commercial metals laboratory. During his six years with the U. S. Navy, he devoted two years to administrative and public relations activities. Mr. Mazan is a member of the American Society for Metals, the American Foundrymen's Society and converses in three foreign languages. He has recently completed a field training course, plus "refresher" activities at the Wyandotte Chemicals Industrial Leboratories.

While at Wyandotte, Mr. Mazan helped conduct test runs with the exclusive seven unit, multi-stage metal washing machine which may be arranged to precisely duplicate any kind of industrial washing cycle.

William F. Newbery, director of sales of the Detrex Corporation, has announced the appointment of **R. H. CHRISTENSON** as sales and service representative of the Chemical Processing Division in the East-Central Region. Mr. Christenson, a graduate of Purdue University with a degree in Metallurgical Engineering, has been in the Chemical Processes Division of Detrex for two and one half years.

R. H. Christenson

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Hanson - Van Winkle - Munning Co., Matawan, N. J., manufacturer of plating and polishing equipment and supplies, has announced the appointment of **EUGENE D. GWYER** as sales engineer for the Michigan-Ohio area, with headquarters at Detroit.

Mr. Gwyer will assist the six H-VW-M salesmen in these two states in the sales engineering of all equipment projects involving special attention. He will use his extensive experience in conveyor sales engineering by concentrating in that activity.

Originally trained in the H-VW-M laboratory in Matawan, Mr. Gwyer has been engaged since joining the company as an equipment and conveyor sales engineer working out of the home office.

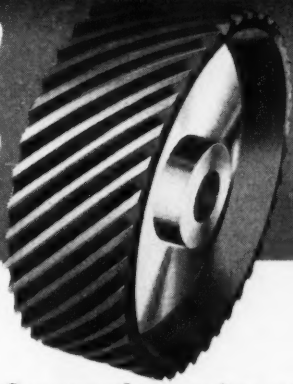
He is a member of the American Electroplaters' Society.

Eugene G. Gwyer

## SOCIETIES

**THE 36th ANNUAL BANQUET** of the **MASTERS' ELECTRO-PLATING ASSOCIATION, INC.**, was held on Satur-

# CUTS COSTS like Magic!



**Chicago Rubber Company's amazing new R54 contact wheel cuts better—faster—longer and will substantially reduce your grinding and polishing costs 3 ways.**

This precision machined and accurately balanced wheel is easily and quickly knocked down and reassembled for tire replacement or change.

- Replace only the rubber tire when necessary instead of the entire wheel.
- Choose from a complete assortment of tire treads for different grinding operations, still using the same wheel.
- And as usual Chicago Rubber Company's R54 contact wheel allows you to get the most wear from your abrasive belt—more than you ever got before.

There is a replaceable rubber tire with proper tread for every grinding requirement and in a wide variety of durometer ratings. Write for descriptive literature.

*"IT'S THE WHEEL THAT DOES THE WORK"*

**CHICAGO RUBBER COMPANY, INC.**

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Makers of the COSMOWHEEL

day, May 8, in the Starlight Roof of the Waldorf Astoria, New York City. The banquet was preceded by a reception and cocktail hour and followed by a floor show and dancing.

Immediately following the banquet Frank Kaiser, Long Island Mechanical Plating Co., Inc., was presented an award as "Plating's Man of the Year" in recognition of his progress in the job plating industry and his work on behalf of the M.E.P.A.

Fig. 1—Mr. and Mrs. Sidney Lieber (left), are shown visiting with Silvio C. Taormina, Executive Secretary of the M.E.P.A., during the cocktail hour.

Fig. 2—(Center photo) A view of the reception and cocktail hour preceding the banquet.

Fig. 3—(Bottom photo) Over 400 M.E.P.A. members and guests assembled in the Waldorf Starlight Roof for the 36th Annual Banquet.

*(PRODUCTS FINISHING Staff Photos)*

# Exquisite

**To be exquisite, said the philosopher, an object must be of outstanding quality as well as surpassing beauty. And where both quality and beauty are concerned, profit-minded manufacturers depend on a *fine finish* to enhance the product and insure its lasting attraction. To achieve these ends, many products demand a custom-coating that's tailored to individual requirements. The development of just such finishes is a specialty with Rockford Varnish Company, where laboratory technicians constantly solve coating problems for products of every kind. You can test the value of this service for yourself, by submitting a sample product for recommendation . . . . . .**

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ROCKFORD, ILLINOIS

*Affiliate*
**GORDON BARTELS CO.**
***Roller Coating Specialists***

*Manufacturers of Protective and Decorative Coatings*

**THE 15th ANNUAL NEW ENGLAND REGIONAL MEETING** of the **A.E.S.** was held May 15 in the Hotel Bond, Hartford, Connecticut. The Hartford Branch was host for the meeting in which the New Haven, Springfield, and Waterbury Branches cooperated. First speaker at the Technical Program was Dr. Abner Brenner, Chief of the Electrodeposition Section, National Bureau of Standards, who discussed "Current Status of Electroless Nickel Plating."

A series of 8 mm. color movies showing "Life in Japan" were shown by Ezra Blount, Editor of PRODUCTS FINISHING Magazine.

Dr. Wilfred Roth, Director of Research, Ultra-Viscoson Corporation, discussed "Ultrasonics as Applied to Metal Finishing" and demonstrated ultrasonic cleaning for the 200 members and guests present for the Educational Session.

A program for the ladies was held at the same time as the Technical Session.

In the evening over 400 members and guests assembled for the Banquet in the Main Ballroom of the Hotel Bond.

R. H. McCahan, the DuPont Co., served as Chairman for the meeting and Perry J. Sloane, Harper-Leader, Inc., was in charge of the Educational Session.

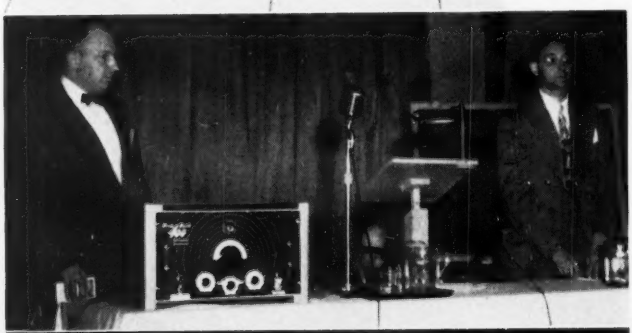

Fig. 1—E. J. Dowling (left), President of the Hartford Branch, welcomed the members and guests to the Educational Session. R. H. McCahan, General Chairman, is shown at right.

Fig. 2 — Dr. Abner Brenner (right) answered a great many questions regarding various phases of electroless nickel plating following the completion of his talk on the subject. Perry J. Sloane, Educational Chairman, is shown at left.

Fig. 3 — Dr. Wilfred Roth (left, center), presented a brief discussion of the general principles of ultrasonic cleaning and then invited the members of the audience to come forward to witness actual demonstrations of cleaning by ultrasonic energy. This demonstration period served also as a question-and-answer period. *(PRODUCTS FINISHING Staff Photos)*

**A. E. S. 41st ANNUAL CONVENTION, Statler Hotel, New York City, July 12 to 15, 1954.**

The **CLEVELAND TECHNICAL SOCIETIES COUNCIL** has sponsored several series of half-hour TV programs over station WNBK under the general title "Adventures in Engineering and Science," the program being prepared and presented in turn by the member societies of the CTSC.

The **CLEVELAND BRANCH** of the **A.E.S.** presented such a program recently. The participants on the program were Howard H. Blough and Jack Little of the A.E.S.; Bill Moseley, a Cleveland high school student; and the station host, Paul Bedford.

The program was presented in the form of questions and answers. The fundamental steps in plating operations were illustrated by means of beaker-size experiments. Additional props used were: a plating barrel, anodes, plating racks, charts and samples of plated parts illustrating decorative and functional uses. A number of slides were shown to illustrate electrorefining, the plating of wire screen, the tin plating of continuous steel strip, and other operations. A short movie film, showing an automatic plating macine in action, was used.

The part the various engineering sciences play in the electroplating field, and the research program of the A.E.S. also were discussed.

## MEETINGS

**THE NATIONAL FEDERATION OF METAL FINISHERS** has announced that its second **MANAGEMENT SEMINAR** will be held on Tuesday, July 13, 1954 at the Statler Hotel, New York City. The Seminar is being held in conjunction with the Annual Convention of the American Electroplaters' Society.

The program for the Seminar includes four sessions on topics of interest to the management of job shops and finishing departments. These include talks on "Management of a Job Shop" by Louis Donroe, manager, Royal Plating Works, Newark, N. J.; "The Future of the Plating Industry," by Silvio C. Taormina, executive secretary, Masters' Electro-Plating Association, New York City; "Job Evaluation for the Finishing Industry," by Kenneth J. Eaton, Associated Business Consultants, Chicago, and a discussion of "Labor Practices" by Ludwig Teller, attorney, New York City.

According to General Conference Chairman, Philip Ranno, president, Imperial Plating Company, Brooklyn, N. Y., the Seminar is being sponsored by the Federation as a service to the industry, and no charges are being made to those attending. Invitations to the event will be sent to owners and operators of job-shop finishing firms throughout the country, and to the managers of finishing departments of manufacturing firms. Attendance is limited to these groups.

## HONORS

Charles E. Crowley

**CHARLES E. CROWLEY**, president of Alsop Engineering Corporation, Milldale, Conn., has been honored by the Unico Club of Southington, Conn., with the club's Ninth Gold Metal Award for devotion and service to his community.

Born in London, England, Mr. Crowley served with the RAF in World War I. He came to the United States in 1920 and late in 1922 joined his friend Samuel Alsop who had founded a liquid processing firm. Following its early beginning in lower Manhattan, Alsop occupied several locations in New York and moved to Milldale in 1937. After the death of the founder in 1949 Mr. Crowley was named president of the firm.

The Southington Chamber of Commerce, the Southington Elks Lodge No. 1669, the Exchange Club of Southington, and the Southington Unico Club have saluted Mr. Crowley as "a tireless worker in numerous movements for a better Southington. The first Christmas lights in the center . . . the new Town Hall . . . consolidation of town and borough . . . the new High School . . . were some of the important objectives, now accomplished, toward which he worked. For these and other causes he provided an indispensable leadership."

Dr. G. Klinkenstein, president of Maas & Waldstein Co. (left) presenting 25-year service awards to Edward Scarano, Leo Handelman and Charles Franceschini. Treasurer R. F. Magnus is shown at right.

Three employees of **MASS & WALDSTEIN CO.**, Newark, N. J., Chicago, St. Louis, and Los Angeles, have been honored by their company for 25 years service. The men, **CHARLES FRANCESCHINI** of Newark, **LEO HANDELMAN** of Nutley and **EDWARD SCARANO** of Bloomfield, were each presented with a solid gold wrist watch and a "25 Year Club" lapel pin by Dr. G. Klinkenstein, president.

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Eight top chemistry, engineering and physics students have been awarded $1,000 **ATLAS POWDER COMPANY** senior year college scholarships, it has been announced by Atlas President Ralph K. Gottshall.

The award winners are: **ROYAL G. ALBRIDGE, JR.**, Ohio State; **RONALD F. CIECIUCH**, Yale; **RICHARD W. EHRHORN**, University of Minnesota; **RALPH W. HAMILTON**, Lehigh; **EVERETT T. McDONEL**, Case Institute; **LOIS M. McKAY**, University of Delaware; **CHARLES M. MOHR**, Massachusetts Institute of Technology, and **ALBERT T. OLENICZAK**, Drexel.

The eight were chosen from a group of 20 finalists who had spent two days in Wilmington being interviewed by Atlas officials and visiting the company's central research laboratories and chemicals plant. Scholarship applications were submitted by over 150 students in the 40 colleges and universities participating in the Atlas program.

In addition to the scholarships, the eight winners will have a chance to gain practical experience this summer by employment in one of Atlas' explosives, chemicals, activated carbon or industrial finishes plants, research laboratories.

Kenneth Hampel

The Joseph B. Kushner Electroplating School of Stroudsburg, Pa., has announced that **KENNETH HAMPEL**, of Grand Rapids, Michigan, has been awarded a scholarship in Electroplating Know How, the modern correspondence course in modern electroplating. Mr. Hampel's entry in the "What I Like And Dislike About The Electroplating Industry" Essay Contest, was selected as best by the judges, on the basis of sincerity and constructiveness of thought. Judges who selected the winning entry consisted of Ezra A. Blount, editor of PRODUCTS FINISHING; Nat Hall, editor of "Metal Finishing," and Al Korbelak, editor of "Plating."

Mr. Hampel is a research plating chemist for the Jervis Corporation. He has been associated with the electroplating and metal finishing industry since 1938 when he received his B.S. in Chemistry from Michigan State College. In 1941 he became an active member of the American Electroplaters' Society, Grand Rapids Branch, and has held several offices in the local organization.

## TRAINING COURSES

Industry's growing interest in the **SPRAY PAINTING SCHOOLS** conducted by the **BINKS MANUFACTURING COMPANY** of Chicago has made it nec-

essary to schedule a new series of one-week sessions following closely upon the completion of the late-winter series.

The dates announced for the new schools are: April 5 through 9; May 3 through 7; June 7 through 11, 1954.

Continuations of the instruction schedule without interruption was considered more desirable than to increase the number of students in a class. At present classes are limited to 40.

The spring and early summer classes will be held in the Binks plant in Chicago from Monday through Friday in quarters specially equipped for instruction purposes. Advance registration is urged. Previous experience in spray painting is not a requisite for enrollment.

Binks invites foremen, supervisors, jobbers and their salesmen, and management executives to attend these classes. Those, too, who service spray painting equipment will find this instruction invaluable. Even those who have never actually used a spray gun can learn correct spray painting methods. Major attention is given to trouble-shooting problems. Considerable time will also be devoted to the use of automatic equipment. Demonstrations of spray booth work are likewise included in the course.

All class members have a common interest in spray painting and problems that involve spray finishing and coating. In less than a week they become thoroughly acquainted with spray guns by taking them apart, re-assembling and testing them. They learn all about such finishing defects as blooming, blushing, orange peel, and so on, and how to remedy or prevent these errors. In addition, they are instructed on paint circulating systems, material handling pumps, oil and water extractor and catalyst painting equipment.

William Beacham, who is in charge of instruction, is a nationally-known paint chemist and spray painting authority and director of Binks Customer Research Laboratory. Mr. Beacham's broad background in the paint field, and his experience as a writer of numerous technical articles, will be helpful to those who have questions about the proper applications of specific finishes and coatings.

A variety of audio-visual aids are used to supplement personal instruction. One of these is a sound-slide film that explains in detail the operation of spray guns and related equipment.

No tuition is charged at the Binks Spray Painting School. Students pay their own transportation to Chicago and expenses while in the city. Applications for enrollment should be made at least two weeks in advance so that reservations for suitable hotel or other accomodations can be made. Address E. F. Watts, Binks Manufacturing Co., 3118-40 Carroll Avenue, Chicago 12, Illinois.

## NECROLOGY

**HENRY DUCKWORTH,** 82, who worked for Norton Company of Worchester, Mass., for more than 60 years, died April 1 in Palm Beach, Florida. He retired as a vice president January 1, 1953. Mr. Duckworth was the oldest Norton retiree in point of service.

His Norton career began March 17, 1890 when as a boy of 18 he was hired as an office boy. During the early days of the company, he did all the bookkeeping alone and was a one-man billing, cost, and purchasing department.

As the company grew larger, he set up the different office divisions and personally directed their operations. He was named assistant treasurer in 1919, a director in 1921 and a vice president in 1941. He had also been controller and a member of the executive committee.

## meetings OF INTEREST TO FINISHERS

**June 7. Institute of Cooking and Heating Appliance Manufacturers, 22nd Annual Convention and Exhibit,** Netherland Plaza Hotel, Cincinnati, Ohio.

**June 9-11. Eighth Annual Convention, American Society for Quality Control,** Jefferson Hotel, St. Louis, Missouri. The 72 Technical Sessions will be held at Kiel Auditorium. For further information contact: U. C. Gramsch, Registrar, 8th Annual A.S.Q.A. Convention, P. O. Box 4436, Wade Sta., St. Louis 15, Mo.

**June 13-18. ASTM 57th Annual Meeting and Eleventh Exhibit of Testing and Scientific Apparatus and Laboratory Supplies,** Hotel Sherman, Chicago, Ill.

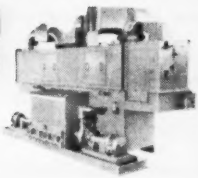
**Jul. 12-15. 41st Annual Convention American Electroplaters' Society, Hotel Statler, New York City.**

**Jul. 31. Detroit Branch A.E.S. Annual Stag Day Picnic.** Glenn Oaks Country Club, Detroit. Tickets from J. F. Siefen, 5657 Lauderdale, Detroit.

*The Finishing Touch* **By J. A. Patterson**

***"That's the funniest double feature I've ever seen."***

# BLAKESLEE
## parts washers



# built to FIT YOUR NEEDS

Built to fit your needs—not only in size and efficiency—*but to last and last.* Blakeslee Metal Parts Washers installed in 1917 and 1918 are still giving satisfactory performance. That's a record for ruggedness that no other manufacturer enjoys. It's proof positive that you can't go wrong when you *buy Blakeslee.*

**G. S. BLAKESLEE & CO.**

*Established since 1880. Manufacturers of solvent vapor degreasers —metal parts washers—Blacosolv degreasing solvent.**

**Write today for full information. CHICAGO:** 1844 South 52nd Avenue, Chicago 50, Illinois: **NEW YORK:** 381 Fourth Avenue, New York City 16, New York: **CANADA:** G. S. BLAKESLEE & CO. LTD., 18 Cranfield Road, Toronto 13, Canada.

**BLACOSOLV® IS STOCKED IN WAREHOUSES FROM COAST TO COAST*

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## SPRAY BOOTHS

1 — Used: David Ludwig 10' Spray Booth complete with wet-cleaning watercurtain section, 1'6"x6'x14' water tank and blower section with 7 H.P. Motor.

1 — Used: David Ludwig 5' Spray Booth complete with wet-cleaning watercurtain section, 1'6"x7'x9' water tank and blower section with 3 H.P. Motor.

**Peninsular Metal Products Corporation**
**1365 Jarvis Street** **Detroit 20, Michigan**

## Modern Masking Materials and Methods for Fabrication and Spray Finishing

**By Arthur P. Schulze**

***64 Pages*** ***47 Illustrations***

Written for department superintendents, shop foremen, process and finishing engineers . . . this manual is a source of ideas for saving time, cutting costs and getting better product quality.

*Price $1.00*

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**431 Main St., Cincinnati 2, Ohio**

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**Testing—Inspection—Research—Engineers**

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**31. Turbo-Blast Washing Machines.** Leaflets available from Storm-Vulcan, Inc., 2225 Burbank St., Dallas 19, Texas, illustrate and describe the Turbo-Blast Washing Machines for industrial cleaning applications.

**32. Tantalum Heating Equipment.** Heating coils of acidproof tantalum are illustrated and described in a leaflet available from United Chromium, Inc., 100 E. 42nd St., New York 17, N. Y. Operational advantages are discussed.

**33. Vinsynite Leaflet.** Available from Specialty Coatings Division, Thompson & Co., Oakmont, Pa., is a folder describing Vinsynite pretreatment for all types of metals, including details of the manner in which Vinsynite is used in finishing six different types of metal products for good paint adhesion and corrosion resistance.

**34. Polishing and Buffing Equipment.** The Murray-Way Corp., P.O. Box 180, Maple Rd. E., Birmingham, Mich., has issued a brochure describing standard and special built automatic equipment for buffing and polishing.

**35. Electroplating With Rhodium.** A booklet explaining the rhodium plating process in full, listing information on preparation of work, cleaning, preliminary plates, bath makeup, solution maintenance, and practical hints for platers, is available from Baker & Co., Inc., 113 Astor St., Newark 5, N. J.

**36. Felt Products for Industry.** Paramount Brand felt wheels, bobs, and sheets are illustrated and described in a catalog available from Bacon Felt Co., Taunton, Massachusetts. Tables on felt wheel selection and specifications, "how-to-do-it" hints, and physical and chemical properties for each size and grade felt are included.

**37. Corobond Catalog.** Complete directions for using Corobond resin bonding cement are presented in a folder available from the Ceilcote Co., 4848 Ridge Rd., Cleveland, Ohio. In addition to proportions, curing time, storage and cleaning of equipment, working time at various temperatures is covered.

**38. Wyandotte Chemicals' Aircraft Products.** Form 2178, available from Aircraft Department, Wyandotte Chemicals Corp., Wyandotte, Mich., gives concise product features and use-directions for 37 of the Wyandotte products used by the aircraft industry.

**39. Complete Finishing Systems.** Available from Cincinnati Cleaning and Finishing Machinery Co., 2008 Hageman St., Sharonville, Ohio, is an illustrated catalog describing finishing systems for such processes as pre-treatment—acid, alkali or solvent cleaning; paint application—by spray, dip or flow coating; drying and baking—using gas, steam, oil or electric heat and makeup air—replacing plant air exhausted by the three previous operations. Examples shown cover small and large parts, auto hardware, ordnance and similar finish applications.

**40. Vapor Degreasing Manual.** A comprehensive work on the subject of vapor degreasing, comprising 34 pages of detailed information ranging from a description of degreasing processes to maintenance and trouble shooting, is available from Circo Equipment Co., 120 Central Ave., Clark Township (Rahway). New Jersey. Fully illustrated with diagrams and cutaway photos, general and specific designs of degreasing equipment are described. Sections on installation of equipment, problems encountered and how to meet them, operating instructions, and actual cleaning of work, are included.

**41. Dynapump Folder.** A magnetically driven centrifugal pump is described in a 4-page bulletin available from The Fostoria Pressed Steel Corp., Fostoria, Ohio. Described in the bulletin are the characteristics, specifications, and performance of the Dynapump.

**42. Blackening Process Data Sheet.** Full operating instructions, including solution preparation and processing procedure for the Black Magic S. S. Blackening Process designed to produce an adherent black finish on stainless steels, cast and malleable irons, is available from The Mitchell-Bradford Chemical Co., 2441 Main St., Stratford, Connecticut. Suggested methods for handling parts in the process as well as safety precautions, are included.

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**43. Phosphate Coatings.** A booklet explaining methods of applying Detrex 701 and 702 phosphate coatings by immersion or spray application has been released by the Detrex Corp., Detroit 32, Mich.

**44. Catalog No. 60.** An illustrated brochure on its line of polishing, buffing, grinding, and deburring equipment is available from Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich. Each piece of equipment is described and standard specifications are listed. Abrasive belt and contour finishing machines are included.

**45. Lazo Plating Barrels.** Hardwood Line Mfg. Co., 2022 N. California Ave., Chicago 47, Ill., has available a catalog illustrating and describing the Lucite plating barrel units manufactured by the firm. Features of each unit are covered.

**46. Plating and Finishing Processes.** Chemicals and processes for metal preparation, zinc electroplating, solution purification, chromate conversion coatings, cadmium electroplating, copper electroplating, Probrite alloy plating, and allied processes, are covered in a brochure of technical bulletins available from Promat Div., Poor & Co., 851 S. Market St., Waukegan, Illinois.

**47. Five Way Savings in Pickling.** The International Nickel Co., Inc., 67 Wall St., New York 5, N. Y., has available a catalog on the uses of Monel pickling equipment. Illustrated, and printed in color, the catalog lists and explains the five major savings in pickling realized through the use of Monel equipment.

**48. Ultrasonic Generator.** Available from the Special Products Div., General Electric Co., Schenectady, New York, is a catalog sheet GEC-544A describing the features, operation and applications of the ultrasonic generator.

**49. Precision-Finishes with Roto-Finish.** A booklet available from Roto-Finish Co., 3704 Milham Rd., Kalamazoo, Mich., explains in detail how the Roto-Finish process can be used for mechanical deburring, descaling, polishing, britehoning, and coloring of intricately shaped products. Advantages of the process, what it is, how it works, and how it is used; types of finishes the process can produce; how to obtain the best results through selection of the right machine and chips; and typical parts improved by the process, are some of the subjects covered by the booklet.

**50. Parco Cleaners.** A booklet explaining the purpose for which each Parco Cleaner was formulated and indicating the way in which each is to be used is available from Parker Rust Proof Co., 2172 E. Milwaukee, Detroit 11, Michigan. Emulsion and solvent type, acid type, and alkaline type cleaners are listed.

**51. Electrostatic Spraying.** A booklet describing how the No. 2 Electro-Spray Process works and presenting case histories of 27 production painting jobs on a wide variety of sizes and shapes of parts and products, is available from Ransburg Electro-Coating Corp., 1234 Barth Ave., Indianapolis 7, Indiana.

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**52. Electric Grinders and Buffers.** Catalog 72-PK, available from The Hisey-Wolf Machine Co., Cincinnati 8, Ohio, illustrates and describes the electric drills, grinders, and buffers and polishing lathes manufactured by the company. General categories of the products listed are: attachments and accessories, buffing and polishing machines, combination grinders and buffers, dust collectors, dust hoods, eye shields, and grinding machines.

**53. Thickness Tester.** The Kocour Electronic Thickness Tester for determining the thickness of metallic coatings is described in a bulletin available from Kocour Co., 4800 S. St. Louis Ave,. Chicago 32, Illinois. For exceptionally thin deposits accessory units of the thickness tester are available.

**54. Portable Lucite Plating Barrel.** Several clearly printed, well illustrated data sheets, listing and describing the component parts of the Portable Lucite Plating Barrel, are available from George A. Stutz Mfg. Co., 1647 W. Carroll Ave., Chicago 12, Illinois.

**55. Metalweld Services.** An illustrated folder describing the company's services and facilities available for their accomplishment is available from Metalweld, Inc., 26th & Hunting Park Ave., Philadelphia 29, Pa. Included in the folder is a description of facilities for applying plastic coatings, rubber linings, hot water tank linings, and metallized coatings to processing tanks and other industrial equipment.

**56. Fosbond Process.** Chemical materials and processes for cleaning, acid pickling, and phosphatizing metal surfaces are described in a booklet available from Pennsylvania Salt Mfg. Co., 511 Widener Bldg., Philadelphia 7, Pa. Applications of these processes in finishing automotive parts, appliances, farm implements, and ordnance items are covered in the literature.

**57. Finishing Equipment.** A catalog illustrating and describing its complete line of finishing equipment is available from J. Holland & Sons, Inc., 274 S. Ninth St., Brooklyn 11, New York,

**58. Bulletin B 20-54** describes different types of Wagner Brothers Electroplating Rectifiers, with capacities from 5 to 50,000 amperes, standard and special designs. Also covers regulators and controls for use in the plating industry. Bulletin B 20-54. Wagner Brothers, Inc., 432 Midland Ave., Detroit 3, Mich.

**59. pH Meter.** Design and operating features of the line-operated pH Meter Model 115 are described in Bulletin 225 being distributed by Photovolt Corp., 95 Madison Ave., New York 16, New York.

**60. Electroplating Specialties.** A catalog folder describing the plating bath test equipment, cadmium brighteners, cadmium and zinc addition agents and purifiers, and other products and processes to improve electroplating and allied operations, is available from R. O. Hull & Co., Inc., 1304 Parsons Ct., Rocky River 16, Ohio.


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